benutzerhandbuch
user manual

picture optimizer plus HD
picture optimizer plus HD SDI

cinemateq
professional home theater

cinemateq
professional home theater

picture optimizer plus HD (SDI)

Video picture optimizer

User Manual

English

As of firmware version 1.20

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IMPORTANT NOTES

Please read this user manual in detail in any case **BEFORE** connecting and taking the picture optimizer plus HD (SDI) into operation and consider all included set up and security notes. Please keep this user manual in case you need to refer to it later on.

NEVER connect to and / or disconnect any other device from the picture optimizer plus HD (SDI) via the in- & outputs, before having switched off the picture optimizer plus HD (SDI) and all other devices and also having disconnected those from the main power supply. Otherwise irreparable damages in any case excluded from warranty can happen to the picture optimizer plus HD (SDI) or other devices.

Always take care that all connections to the in- & outputs of the picture optimizer plus HD (SDI) are safely fixed and if possible screwed (VGA & HDMI/DVI sockets) or protected (BNC sockets). Especially HDMI and DVI connections are extremely sensitive! "Wobbly" connections can lead to irreparable damages on the picture optimizer plus HD (SDI) or other devices which are in any case excluded from warranty.

Only use the external power adapter included in the scope of supply. Damages caused by third party power supplies are excluded from warranty. Before connecting the external power adapter to the main power supply it needs to be connected to the picture optimizer plus HD (SDI). Never disconnect power adapter and picture optimizer plus HD (SDI) if the power adapter is connected to the main power supply.

Changing the preset values for resolution and frame rate can lead to damages at the connected displaying device in rare cases. Please in any case take into account the maximum values, which can be processed by your displaying device and in exceed those in neither case when adjusting the settings in the picture optimizer plus HD (SDI) menu. Any liability from our side for damages caused by such a behavior is excluded.

Only qualified service technicians are allowed to open the picture optimizer plus HD (SDI) or the power adapter included in the scope of delivery and perform service for the devices. Damages caused by disregard are in any case excluded from warranty.

Warranty registration

In order to activate the two-year device warranty, you need to register your picture optimizer plus HD (SDI) at cinemateq within 4 weeks from purchase date.

Please therefore use the online registration form on www.cinemateq.com in the support section under device registration.

Please note:
Only as a registered customer you will have the possibility to download new firmware (software) versions or new extension options by the internet.

INTRODUCTION

Thank you very much

for your decision to use a cinemateq product. Congratulations for having bought a high quality device designed in Germany and produced in the EU. As a specialist for quality picture and sound optimization of home theater and presentation systems we warranty constantly high quality and trouble-free operation of our products.

This user manual stepwise explains the installation and configuration of the cinemateq picture optimizer plus HD with / without SDI option and describes all functions and settings possible in detail. For further information on the product itself, about configuration and tips & tricks in case of problems appearing please refer to the support section on www.cinemateq.com.

In case of any technical questions or problems please contact your cinemateq authorized dealer. He supports you with correct installation and best possible adjustment and / or set up of the device towards your components and requirements. All of our cinemateq partners are especially trained by us for best integration of the picture optimizer plus HD (SDI) into new or existing systems.

SUPPORT HOTLINE

Besides our support hotline is available for technical questions and / or problems concerning cinemateq products on weekdays from Monday to Friday during business hours from 9 a.m. – 5 p.m..

You can reach our support team

by **phone**: +49 / (0)89 / 89 13 69 29

by **fax**: +49 / (0)89 / 89 13 69 13

by **email**: support@cinemateq.com

In the support section of www.cinemateq.com you will find the latest technical news and downloads, useful tips and frequently asked questions & answers regarding our products for your reference.

INSTALLATION IN 6 STEPS

STEP 1: CHECK SCOPE OF DELIVERY

First of all please check the contents of the packaging of your cinemateq picture optimizer plus HD (SDI) in order to make sure everything is included. The contents are:

- picture optimizer plus HD (SDI)
- remote control
- 2 batteries for remote control ('AAA')
- external power adapter (230V ~50Hz)
- user manual in German and English

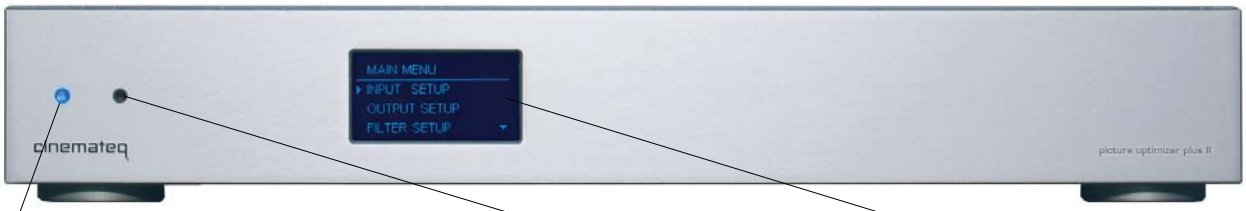
If a part is missing or should be damaged, please immediately contact your dealer. Please keep the packaging in case you ever need to transport the picture optimizer plus HD (SDI).

The picture optimizer plus HD (SDI) is only configured and operated with the supplied infrared remote control. Thus please first of all put the remote control into operation: Remove the cover of the battery compartment on the back of the remote control, insert two type 'AAA' (LR03) batteries and ensure the right polarity (plus-poles point downwards). Close the battery compartment cover. The remote control is now ready for use.

STEP 2: SETUP & CONNECTION

Setup

The picture optimizer plus HD (SDI) should be positioned next to your video source(s), depending on the length of the connection cables you have chosen.



❶ status LED (RED = Standby, BLUE = operation) ❷ infrared receiver for remote control ❸ display

The picture optimizer plus HD (SDI) is only configured and operated by infrared remote control. Please select a location in which there are no obstructions – such as cabinet doors or any other appliance – in between the infrared receiver (❷) and the remote control.

Please also make sure that you can see the picture of your displaying device whilst operating the picture optimizer plus HD (SDI) with the remote control as you will not be able to use the device's on-screen menu. Locations in other rooms or in closed cabinets are not recommended as they are – next to other things – not suitable for operating the video switcher function of the picture optimizer plus HD (SDI), despite you are using a RS-232 control system.

Security notes for setting up the picture optimizer plus HD (SDI)

Set the picture optimizer plus HD (SDI) onto a stable and flat surface.

Keep the picture optimizer plus HD (SDI) away from radiators and other sources of heat and protect it from direct sunlight.

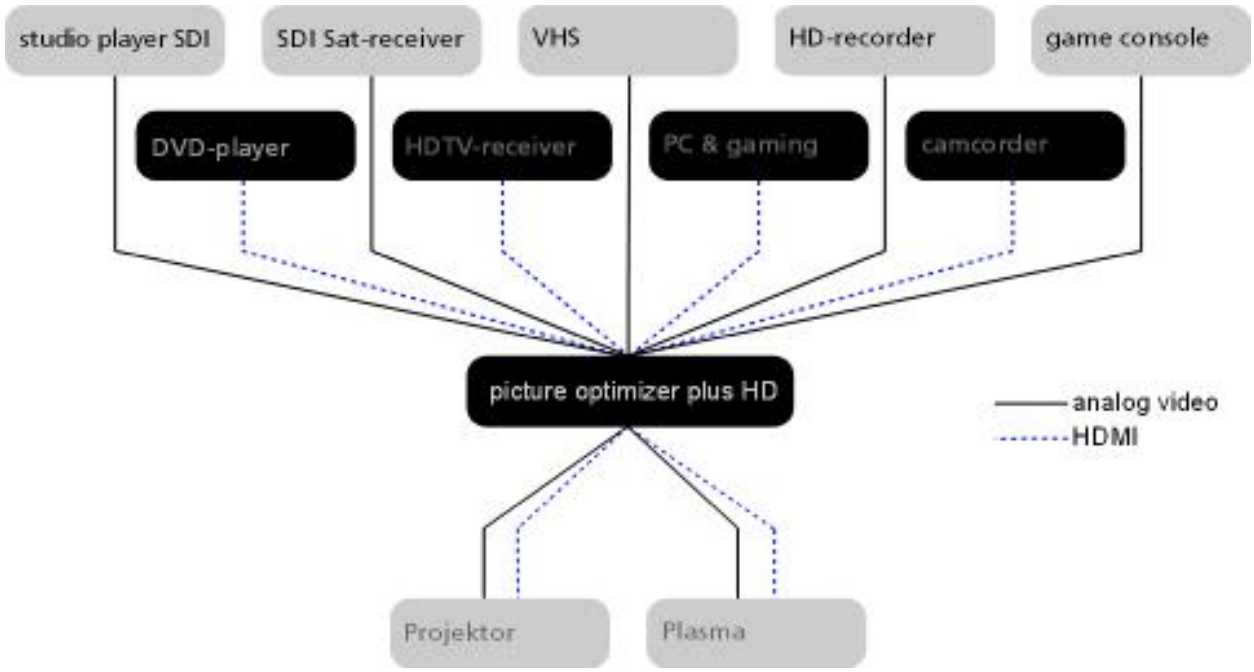
If the picture optimizer plus HD (SDI) is set up in a cabinet or similar, leave about 5 cm space around the device, so that air can circulate unhindered in order to avoid accumulation of heat.

Do not place any objects, little blankets or the like on the device, in order to avoid accumulation of heat.

The picture optimizer plus HD (SDI) should not be exposed to any drops or splashes of water nor any objects filled with liquids (e.g. vases) should be placed on the device.

Connections

The picture optimizer plus HD (SDI) should be placed between video source(s) and displaying device(s) like in the following example:



The following devices are suitable for connection to the picture optimizer plus HD (SDI):

Video sources (input)	Displaying devices (output)
DVD player, DVD recorder	CRT projector *
analog or digital VCR	digital DLP- or LCD-projector
HDTV -, SAT-, Pay-TV-, cable- or digital receiver	plasma- or LCD-screen
TV-Tuner or personal TV system	TV with special "progressive input"*
video switchers or home cinema receivers with video switch	rear projection TV with progressive and / or VGA input * (for PC)
game console and media center	analog PC monitor*
Computer and media center	TFT monitor
Hard Disc recorder	Any "HD ready" device

* (only SDTV)

The following interfaces and signal variants are offered for connecting the mentioned devices – the order of interfaces equals the quality of the video signal transferred:

Inputs	Outputs
▪ 2 x SDI* (BNC socket) for SDI signals (digital) ▪ 4 x HDMI (HDMI socket) for HDMI and (by adapter) DVI signals ▪ 2 x YUV** (3 Cinch socket) for component signals (YUV) ▪ 1 x SCART (SCART socket) for RGB or Composite (FBAS) signals ▪ 2 x S-Video (mini DIN connector) for S-Video signals ▪ 2 x Composite (Cinch socket) for Composite (FBAS) signals ▪ 5 digital audio inputs (3 x Coax and 2 x Toslink)	▪ 1 x HDMI (HDMI socket) with digital HDMI/DVI output signal ▪ 1 x DVI (DVI socket) with digital DVI output signal ▪ 1 x YUV (with Adapter) alternatively with component (YUV) or RGsB, outputsignal ▪ 1 x RGB (5 BNC socket) alternatively RGBHV, RGsB, RGBs or YUV output signal ▪ 1 x VGA (VGA socket) alternatively RGBHV, RGsB, RGBs or YUV output signal ▪ 2 separated audio outputs (1 x Coax, 1 x Toslink

*) only picture optimizer plus HDSDI (instead of the composite inputs) **) not suitable for progressive signals!

Please note

Only "interlaced signals" are accepted by the analogue or respectively SDI inputs (meaning all inputs except HDMI), this means, for example, a DVD player with (non deactivateable) progressive output (YUV) or a computer (VGA) cannot be connected to these video inputs!

It is not possible to present coded HDMI/HDCP signals via the analogue outputs.

About SDI

The picture optimizer plus HD SDI integrates two digital SDI inputs. SDI - *Serial Digital Interface* - is a 10-bit interface for transfer of digital video data originally developed by Sony. The SDI standard is also known as SMPTE 259M. SDI up to now is mainly used in professional video- and studio technology and enables loss-free transfer of video- (but also audio-) signals over larger distances. Both DVD players and SAT-/cable receivers can be modified for distribution of data in SDI data streams.

The crucial advantage is, that SDI is the one and only digital standard input signal being enabled to transfer an unadulterated 1:1 rendition of the digital video signal of DVD or digital TV without any loss in quality even over larger distances.

STEP 3: CONNECTION OF OTHER DEVICES

Preparation of devices to be connected

In order to ensure a perfect video picture optimization the picture optimizer plus HD (SDI) needs the video signal coming from the video source with certain "attributes" as a prerequisite and the displaying device is meant to render the optimized output signal of the picture optimizer plus HD (SDI) without "interference" (e.g. by filters applied).

Therefore you should check and prepare your video source(s) and your displaying device before connecting them to the picture optimizer plus HD (SDI).

Video source (e.g. DVD player, SAT receiver)

First connect the source directly to the displaying device without the picture optimizer plus HD (SDI) in order to be able to access the on-screen menu of the video source:

1. The picture optimizer plus HD (SDI) needs an unfiltered and unchanged video signal. Therefore we recommend to switch off all picture influencing filter functions such as "noise reduction" via the set up menu of your video source (e.g. DVD player). Please refer to the user manual of your video source to find out which filter- and / or picture optimizing functions are available.
2. In case your video source has an integrated "aspect ratio conversion"(mostly DVD players), please set the output format to 16:9 (not 4:3 or „letterbox") in the set up menu in either case.
3. The picture optimizer plus HD (SDI) can only process progressive signals at the HDMI inputs. At all other inputs, only „interlaced" (SDTV, 567i) signals can be processed.
4. In case you want to connect your video source using the SCART input of the picture optimizer plus HD (SDI), you should set the SCART output of your video source to RGB output in the device's set up menu (e.g. AV output = RGB). If your video source doesn't support RGB output via SCART (e.g. only S-Video or Composite), you should – if possible – chose another connection (such as YUV or S-Video output). Please only use a Composite signal via SCART, if there is no other connection available (therefore the SCART input of the picture optimizer plus HD (SDI) needs to be set to "Composite", see page 72).
5. The best possible connection between video source and picture optimizer plus HD (SDI) is a digital connection via SDI as it transfers the digital video signal unchanged (1:1). As an analog connection we recommend either RGB (via SCART) or YUV (via 3 x Cinch). S-Video or Composite connections deliver a minor quality signal.

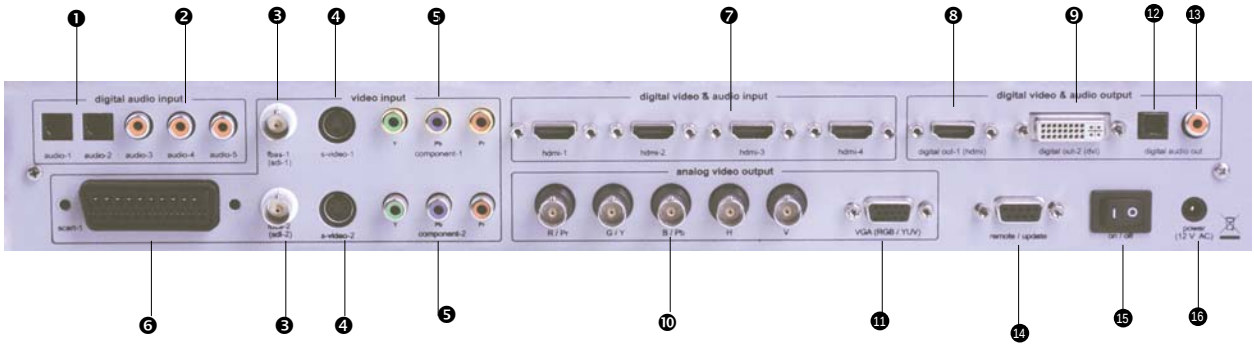
Displaying device (e.g. projector, plasma)

Now please configure the displaying device – still without picture optimizer plus HD (SDI):

1. If your displaying device integrates picture influencing filters and optimizing functions, switch those off also in the device's set up menu. Eventual "Key Stone Correction" or "Overscan" settings should be switched off or set to neutral for the time being.
2. We also recommend to set all picture parameters (such as brightness, contrast etc.) to neutral for the time being as the picture optimizer plus HD (SDI) transfers the optimized video signal with different picture values.
3. The picture format conversion should be adjusted to the displaying device's format (if 16:9 to 16:9 and / or "normal", if 4:3 to 4:3 or "full picture").
4. The optimal connection between the picture optimizer plus HD (SDI) and your displaying device is a digital connection via HDMI or DVI. In case your device has no digital HDMI or DVI interface, please check which signal format "YUV" or "RGB" (RGB HV, RGBs, RGsB) is accepted by which analog interface (VGA, 3 x Cinch or 5 x BNC) of your device and choose on of these options. These settings afterwards also need to be "mirrored" in the picture optimizer plus HD (SDI) setup later on. The best quality connection depends on your displaying device, under www.cinemateq.com in the support section you can find recommendations of our testers for the most common displaying devices.

Connection

The picture optimizer plus HD offers the following interfaces, at the picture optimizer plus HD SDI the two Composite inputs (❺) are replaced by two SDI inputs (BNC socket):



	Category	Signal format	Remote control
1	Toslink 1	S/PDIF (PCM, DD, DTS)	
	Toslink 2		
	Toslink 3		
2	Digital Coax		
	Digital Coax		
3	SDI 1 (Composite 1)	SDI Serial (576i) FBAS interlaced	[3]
	SDI 2 (Composite 2)		[4]
4	S-Video 1	Y/C Signal interlaced	[5]
	S-Video 2		[6]
5	YUV 1	Component Signal interlaced	[7]
	YUV 2		[8]
6	Scart	RGB or FBAS	[2]
7	HDMI 1	Digital HDMI [*] = processed / [#]= bypass	[*] + [1] / [#] + [1]
	HDMI 2		[*] + [1] / [#] + [1]
	HDMI 3		[*] + [1] / [#] + [1]
	HDMI 4		[*] + [1] / [#] + [1]
8	HDMI	Digital HDMI (incl. Audio) / DVI Signal	
9	DVI	Digital HDMI / DVI Signal	
10	RGB H/V	RGsB, RGsB3, RGBs, RGBHV, YUV, YUV3	
11	VGA	RGsB, RGsB3, RGBs, RGBHV, YUV, YUV3	
12	Toslink	S/PDIF (PCM, DD, DTS)	
13	Digital Coax	S/PDIF (PCM, DD, DTS)	
14	RS232	Serial Interface for firmware upgrade / operation via RS 232	
15	ON / OFF		
16	Power	12 V	

* several displaying devices cannot process a YUV signal transmitted by a VGA interface, unless a special VGA adapter cable VGA Adapter Cable (15 Pins on 3 x Cinch) is used, with which H & V Sync is not transmitted.

Security notes for connecting other devices

NEVER connect to and / or disconnect any other device from the picture optimizer plus HD (SDI) via the in- & outputs, before having switched off the picture optimizer plus HD (SDI) and all other devices and also having disconnected those from the main power supply. Otherwise irreparable damages - in any case excluded from warranty - can happen to the picture optimizer plus HD (SDI) or other devices.

Always take care that all connections to the in- & outputs of the picture optimizer plus HD (SDI) are safely fixed and if possible screwed (VGA-, HDMI - & DVI sockets) or protected (BNC sockets). Especially HDMI and DVI connections are extremely sensitive! "Wobbly" connections can lead to irreparable damages on the picture optimizer plus HD (SDI) or other devices which are in any case excluded from warranty.

TIP:

- We recommend to always connect the picture optimizer plus HD (SDI) directly to the displaying device – video switchers or audio-/video home cinema receivers connected in between can deteriorate picture quality.
- We recommend to use high quality cables, as the quality of signal transfer via cable is a crucial factor in video picture optimizing. Fitting connection cables and adapters for all in- and outputs from cinemateq are available at your specialized dealer.

Mains voltage

After having connected the picture optimizer plus HD (SDI) with all video sources and displaying devices, connect the power adapter. Please take care that

- the power adapter must not be connected to the main power supply, when connecting it to the picture optimizer plus HD (SDI).
- the On-/Off switch (⓯) of the picture optimizer plus HD (SDI) is set to "OFF".

After having connected the power adapter, connect it to the main power supply. Your picture optimizer plus HD (SDI) is now ready for the first operational steps.

Security notes for connecting the power adapter

Before connecting the external power adapter to the main power supply it needs to be connected to the picture optimizer plus HD (SDI). Never disconnect power adapter and picture optimizer plus HD (SDI) if the power adapter is connected to the main power supply.

Only use the external power adapter included in the scope of supply – other power adapters can cause damages to the device.

Only qualified service technicians are allowed to open the external power adapter and perform service for the device.

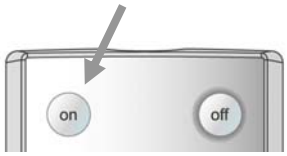
Ensure, that the power adapter never gets in contact with liquids, combustible objects or gases of neither composition nor is placed next to any of those.

Place the power adapter in a way that ensures a minimum of 5 cm space around the device in order to avoid accumulation of heat.

If you don't use the picture optimizer plus HD (SDI) for a longer time please disconnect the power adapter from the main power supply.

STEP 4: FIRST OPERATIONAL STEPS

Your picture optimizer plus HD (SDI) is now ready for the first operational steps. To switch the device on, please set the power switch on the device's back panel to "ON" first. The picture optimizer plus HD (SDI) is now in "stand by mode", the status LED on the device's front side shines "RED", the display is switched off yet.



Now switch on the connected video source and your displaying device and take care, that the video source distributes a signal (e.g. DVD player: insert DVD and press "Play").

Next "wake up" the picture optimizer plus HD (SDI) out of "stand by mode" using the "power ON" key on the remote control. The status LED starts flashing RED / BLUE, after about 5 seconds the display is switched on and shows the basic status info.

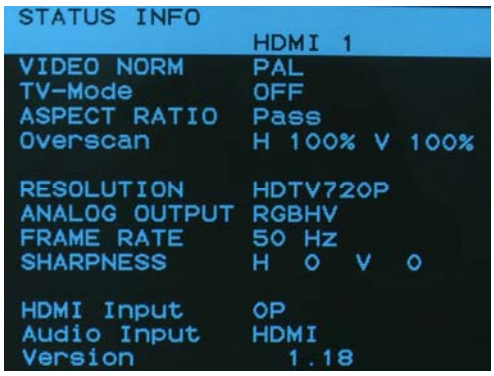
Your picture optimizer plus HD (SDI) is now ready for use (= "operating mode") and can be configured towards your connected devices.

STEP 5: OPERATION ELEMENTS & REMOTE CONTROL

Operation elements

The operation and configuration of the picture optimizer plus HD (SDI) is performed via the on-screen menu and / or the graphical info display integrated into the device's front panel, showing the same content like the on-screen menu in a compact format.

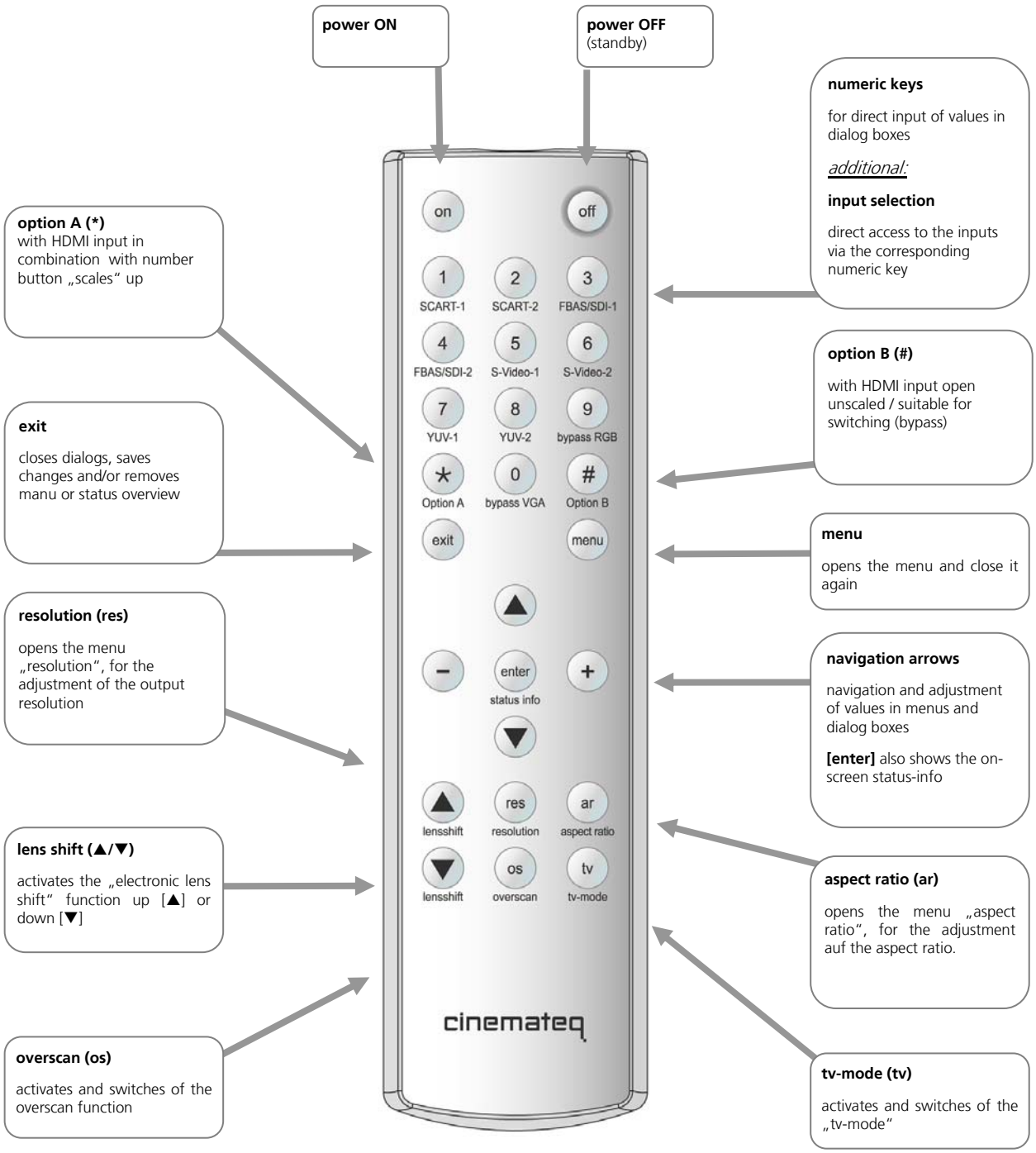
Info-Display picture optimizer plus HD (Status-Info)



On-Screen menu (Status-Info)

On account of simplicity in the following explanations and pictures we nearly exclusively refer to the clearer on-screen menu, despite it is not visible in the configuration steps.

Remote control



STEP 6: BASIC CONFIGURATION

In this step you will learn, how the picture optimizer plus HD (SDI) is configured towards the connected devices in order to reach a correct picture rendition.

An optimal picture rendition using the full spectrum of the picture optimizer plus HD (SDI) needs further adjustments – please refer to the point "The optimum configuration" (from page 99 on).

Factory settings

The most important basic settings are shown in the "status info" in the display of the picture optimizer plus HD (SDI):

- **IN: HDMI 1**
  HDMI 1 is set as active input in factory set up.
- **Out: RGB HV** (analogue) and **HDMI & DVI** (digital)
  The output format is set to RGB HV in factory set up. This signal is always distributed by all outputs enabled for this.
- **Res.: 720p (50 Hz)**
  The output resolution is set to "720p"with a frame rate of 50 Hz in PAL (NTSC: 60Hz).

If you have connected your devices according to these factory settings and can already see the picture of the video source on your displaying device, you can pass by the point "Connection configuration".

Connection configuration

Before starting, please review the following check list and if necessary enter your values into the table:

(A) Which input of the picture optimizer plus HD (SDI) is the video source you used for basic configuration connected to (we recommend a DVD player)?	
(B) In case it is the SCART 1 input: Which signal format (RGB / Composite) is the video source distributing via SCART?	
(C) In case it is the YUV 1/2 input: Is a possible progressive output of the video source via its YUV output deactivated?	
(D) Which interface (VGA, DVI, 5 x BNC, 3 x Cinch) is your displaying device connected to?	
(E) Incase using YUV connections via 3 x Cinch (input or output): Are the cables connected correctly to the picture optimizer plus HD (SDI) and video source / displaying device? "Y" = Green, "U" (Pb) = Blue, "V" (Pr) = Red	

Connection video source ➔ picture optimizer plus HD (SDI)

First, please choose the input your video source is connected to as "active input" (A).

For this, press the corresponding input button on the remote control (number block), e.g. button [5] for input „S video 1" or press the „Option A" button and number „1" button if the picture source was connected via HDMI 1. The status indication on the display will change correspondingly to: S video or respectively HDMI 1.

The input for your connected video source is now activated. If you can now see a picture on your displaying device, you can directly jump to the point "*Resolution & frame rate*" on page 91.

Notice: The picture optimizer plus HD (SDI) „always" shows a picture (onscreen display), even if there is no input signal!

Conversion of the SCART inputs between RGB ⇔ Composite

A SCART interface can transmit different signals. The picture optimizer plus HD (SDI) either understands RGB- (highest quality variant) or Composite signals via its SCART inputs. Factory setting is RGB:

If you would like to switch the SCART input from RGB to Composite, you must change the engagement of this SCART input in the input menu of the picture optimizer plus HD (SDI) as follows.

(1) Therefore please press the [menu] key on the remote control once. The "Main Menu" selection appears in the display.

(2) Select "Input Setup" using the [▲] / [▼] keys and confirm this by pressing the [Enter] key.

(3) Now select the menu point " Scart Configuration" using the arrow keys again and press the [Enter] key.

(4) With the arrow keys now select the menu point "SCART 1"press the [Enter] key.

(5) The currently set value ("RGB" / "Composite") is now highlighted in a blue bar, select the desired value with the [+] / [-] keys and activate it by pressing the [Enter] key.

(6) By pressing the [exit] key you close all menus and get back to the status info.

In the display the status indication changes accordingly after renewed selection of the entrance over the remote maintenance in: **In: SCART 1 Comp.**

Please note:

The description of the configuration of analogue outputs can be found in the appendix!

ADJUSTMENT OF THE RIGHT RESOLUTION

Crucial for the picture quality of the displaying devices is the addressing with the "right" resolution. This means the resolution, at which the displaying device can render the video picture without further conversion errors. Best case for digital devices (such as LCD-/ DLP projectors, plasmas etc.) this is the so called "native" resolution, i.e. exactly the physical pixel resolution of the displaying device's "panel". Unfortunately the native resolution does not work with all devices as the control electronics can not process it. Here it applies to find the best possible compromise.

Please first check, which "native resolution" (also called panel resolution) your displaying device has (e.g. XGA 1024 x 768) – this information can be found in the technical data of the device.

Next select the resolution, that comes nearest to this "native resolution" in the following table. The picture optimizer plus HD (SDI) offers 22 different predefined resolutions for both PAL and NTSC signals.

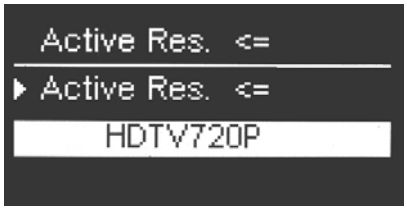
HDMI devices normally resolve the fitting and best picture signal amongst each other. An adjustment of the resolution is not necessary in this case.

resolutions table

<table>
<tr><th>Resolution</th><th>H x V</th><th>Norm</th></tr>
<tr><td>Doubling</td><td>1440 x 576p / 480p</td><td rowspan="4">SMPTE
PAL
50Hz
for HD ready Panels</td></tr>
<tr><td>HDTV 720p</td><td>1280 x 720p</td></tr>
<tr><td>HDTV 1080i</td><td>1920 x 1080i</td></tr>
<tr><td>HDTV 1080p</td><td>1920 x 1080p</td></tr>
<tr><td>Wide-VGA</td><td>852 x 480p</td><td rowspan="18">VGA = PC
PAL 50 Hz
NTSC 60 Hz

(Configuration for analogue outputs see appendix)</td></tr>
<tr><td>480p</td><td>1440 x 480p</td></tr>
<tr><td>540p</td><td>960 x 540p</td></tr>
<tr><td>576p</td><td>720 x 576p</td></tr>
<tr><td>576i / 480i</td><td>1440 x 576i/480i</td></tr>
<tr><td>Tripling</td><td>1440 x 864p / 720p</td></tr>
<tr><td>Quadrupling</td><td>1440 x 1152p / 960p</td></tr>
<tr><td>PDP 1</td><td>852 x 1024p</td></tr>
<tr><td>PDP 2</td><td>1024 x 1024p</td></tr>
<tr><td>SVGA</td><td>800 x 600p</td></tr>
<tr><td>XGA</td><td>1024 x 768p</td></tr>
<tr><td>Wide-XGA 1</td><td>1280 x 768p</td></tr>
<tr><td>Wide-XGA 2</td><td>1365 x 768p</td></tr>
<tr><td>Wide-XGA 3</td><td>1366 x 768p</td></tr>
<tr><td>SXGA (4:3)</td><td>1280 x 960p</td></tr>
<tr><td>SXGA (5:4)</td><td>1280 x 1024p</td></tr>
<tr><td>DILA</td><td>1366 x 1024p</td></tr>
<tr><td>UXGA (4:3)</td><td>1600 x 1200p</td></tr>
<tr><td>custom 1</td><td colspan="2">(480p pre-adjusted)</td></tr>
<tr><td>CT 50</td><td colspan="2">Only for the cinemateq flatscreen CT 50 HD</td></tr>
</table>

You activate the selected resolution over the remote control:



(1) Please press the key [res].

(2) In the display the menu appears "**Active resolution**" with the presently active resolution (e.g. "doubling"). Press now the key [enter], those active resolution is now deposited blue.

(3) Select now with [+] / [-] keys the desired resolution and activate these with [enter] key.

(4) By repeated pressing the key [res] the menu "Active resolution" closes.

You can see which resolution is activated on the display (Res) or in the on-screen status info.

In case no picture is shown after having activated the selected resolution, your displaying device does not understand the selected resolution. Please go back to the initially set resolution (doubling, 720p or 1080i) and test another resolution coming near to your "native resolution". Eventually a different connection variant towards the displaying device may help: some devices unfortunately don't understand "PC-resolutions" such as "XGA" or "SXGA" via a YUV signal.

Many digital displaying devices also work perfectly with one of the two HDTV resolutions 720p or 1080i, i.e. these are displayed by the device without "errors". This is an alternative you should try in any case as for the time being it is the only "resolution standard" most of the display manufacturers stick to.

OPERATION

Please note that changes you make to the picture optimizer plus HD (SDI) will have a new initialization of the TMDS dialogue as a consequence and because of this time delays will occur. For this reason we recommend carrying out possible format changes on your playback unit while „zapping“ through the TV program.

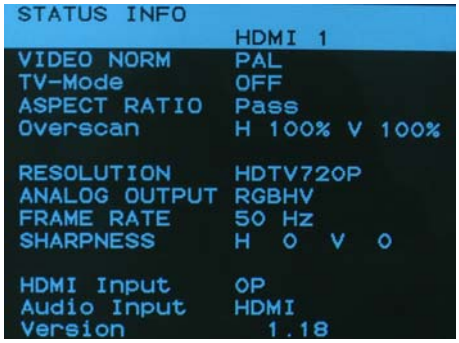
GENERAL FUNCTIONS

Status info

The status info gives information about the actual status of the most important settings of the picture optimizer plus HD (SDI).

By pressing the [enter] key the status info will be faded as a On-screen info box and can be closed again by pressing the [Enter] key and / or the [exit] key any time.

A shortened version of the status info is also shown in the info display in operating mode.



VIDEO SWITCHER

Switching of inputs

The selection of the active input and/or switching is made directly by the input keys (figure keys) of the remote control (only if no menu is activated).

In order not to have to leave the menu during the configuration, an alternative selection is also possible over the menu "Input Setup"/ menu option "Active input".

Which entrance is activated is to be seen in the display or in the On-screen status info.

Selceting HDMI inputs with processing

To select the HDMI input 2 with processing, please press [Option A] followed by [2] or respectively [Option A] and 1, 3 or 4 for the other HDMI inputs.

Features of the HDMI inputs

The four HDMI inputs can also be used and switched as bypass inputs. This means the chosen HDMI input signals are switched unprocessed to the HDMI and DVI output. The advantage here is a faster switch time due to the shorter HDMI dialogue, but, however, without scaling and picture optimizing. The desired HDMI bypass source is chosen by the button combination [Option B] + [1], [2], [3], [4].

We only recommend the HDMI bypass inputs for 1080p signals which are ideal for higher performance in gaming consoles. But caution: when selecting a bypass input, no on-screen menu is shown!

SELECTING THE OUTPUT FORMAT

The output format defines the aspect ratio in which the picture is displayed. The most popular ones are the 4:3 TV format and the 16:9 widescreen format.

The picture optimizer plus HD (SDI) can convert different video input formats into the output format best for picture rendition. This so called "aspect ratio conversion" or "format conversion" function is much more powerful than the simple format conversion between 4:3 and 16:9 picture formats integrated into DVD players.

Background information

A format conversion always becomes necessary if the applied input format on the DVD (e.g. 16:9 anamorphic) does not correspond to the output format of the displaying device (e.g. 4:3).

For this reason a format conversion capability already providing the video signal in the necessary format 4:3 or 16:9 is also integrated into DVD players.

When applying the 4:3 setting however there is a clear loss in picture quality as the player "scales down" the picture with black bars "wasting" valuable picture lines. A PAL and / or NTSC video signal per definition consists exactly out of 576 and / or 480 (field) lines. Due to the picture size reduction only 432 (PAL) and / or 360 (NTSC) lines remain for the picture, whereas the remaining 144 and / or 120 lines are occupied by black bars.

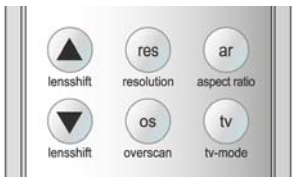
However it is necessary to use all available lines for the best possible picture rendition. A "full resolution" video signal delivers far better results, especially if further optimization steps follow.

The picture optimizer plus HD (SDI) therefore uses a "trick": Instead of processing an already adjusted signal from a player with black bars, it takes the unchanged format from the DVD with all lines (16:9) and converts it into the selected output format itself once optimization is done. Therefore: ALWAYS set the DVD player to 16:9 output!

In order to adjust the picture delivered by the video source to the selected output format, the picture optimizer plus HD (SDI) stretches and / or compresses the picture format depending on requirement horizontally and / or vertically. The following aspect ratio conversions can be selected:

- pass: pass through (no change in picture format)
- -33 V: "compress" vertically by -33%
- -33 H&V: "compress" horizontally & vertically by -33%
- +33 V: "stretch" vertically by +33%
- -33 H: "compress" horizontally by -33%

The choice of the desired aspect ratio is made by the key [ar]::



(1) Press the key [ar].

(2) In the display and/or On-screen the menu "**aspect ratio"** appears with the presently active aspect ratio (e.g. "pass"). Press now [enter], the value is now deposited blue and/or orange.

(3) Select with [+] / [-] keys the desired aspect ratio and activate these with [enter] key.

(4) Repeated pressing of the key [ar] closes the menu "aspect ratio". Which format transformation is active, see in the On-screen status info under the point "aspect ratio"..

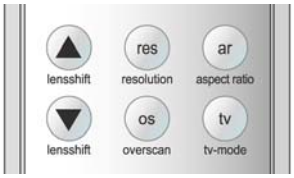
In the handbook appendix you will learn when which format change is best to use.

TV-MODE

The optimizing procedure has been exclusively designed for video signals in the so called "camera-" and / or "video mode". This is video material recorded with digital video technology such as TV signals like sports broadcasts, concerts, TV series etc.

The typical rendering problems such as fraying edges and "visible pixels" in moving objects are clearly reduced with the "TV-Mode".

The "TV mode" is activated and/or deactivated manually over the remote controll key [tv].



In addition to that the "TV-Mode" can also be preset for each input, i.e. you can define in the input setup if the "TV Mode" should be set to "on" or "off" for a certain input (more on that in the following under "Input setup").

However the "TV-Mode" can – regardless of this preset – be switched off or on manually. With every switching of inputs the preset for the according input is active again.

Please note:

Every switching of an input, change of resolution, format conversion or switching off the device, will automatically deactivate the "TV-Mode", despite it is preset for a certain input via input setup.

ONLY use the "TV-Mode" for video material in camera mode – with film material (e.g. cinema movies from DVD) picture rendition is slightly deteriorated!

Whether the "TV-Mode" is active or not, can be seen in the status info (press [Enter] key once).

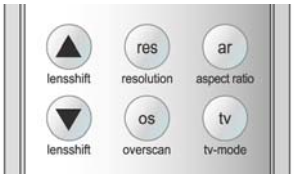
OVERSCAN

As the perfect scaling of the picture optimizer plus HD (SDI) always renders the full picture content without "cut off" on the edges, also errors on the picture edge are displayed, when watching "minor quality" signals (e.g. TV signals), which are normally outside the viewable area e.g. when viewing on a standard TV device.

With the function "Overscan" one can variable from 99% to 70% "zoom" into the picture, i.e. 1% to 30% of the edge is "cut" and the remaining picture content is increased on the full output quantity. Particularly with TV stations signal and old video material this function guarantees an optimal representation of the picture content without disturbing "flutter lines" in the boundary regions.

Usually "Overscan" is implemented symmetrically, i.e. horizontal and vertically directly, - it works thus like a symmetrical zoom. The Overscan can optional be adjusted in addition, horizontal and vertically separately. Thus adjusts errors in picture geometry (e.g. with a 15:9-Monitor) or will produce user-defined display formats.

The function "Overscan" (default value Overscan H & V = 100%) is switched over the key [OS] on and/or off. Additionally can be switched by key combination [option A] + [OS] between "symmetrical Overscan" (ON V=H) and "separately adjusted Overscan" (ON V/H)..



The setting of the Overscan value from 100% to 70% is made by the Input-Setup menu, more in addition under "Input Presettings" starting from page 79.

Just as the "TV mode", the desired "Overscan" can also be pre-defined for each input, i.e. in the Input-Setup is deposited, whether during this input the "Overscan" is to stand on "OFF", on ON V=H or on ON V/H, and how much the picture is "zoomed in" and/or the edge is cut away. More to it under "input Presettings" starting from page 33.

Naturally the Overscan can despite this pre-setting also be manually switched. After each switching the pre-setting of the respective input is however again active.

Please note:

Whether the "Overscan" function is activated or not, can be called up by the status info. (press [enter] key.

By activating the function "Overscan" you leave the "perfect" scaling. With signals with picture errors at the edge this is however an acceptable compromise.

Additional application type of the "Overscan" function is offered with 21:9 films on 16:9 display-device and/or screens: With a Overscan of 75% it can become "zoomed in" accurately so far into the picture, that the black bars from the picture disappear. Disadvantage is natural that the left and right contour in same way becomes "cut off".

CONFIGURATION - THE MAIN MENU

The "Main Menu" offers access to the most important settings. You can call it up through pressing [menu] key and close it by repeated press again.

Starting from here you choose the sub menus (e.g. Input setup) with the cursor arrow using the [▲] and [▼] navigation keys and confirm with the [Enter] key. From the sub menus you can go back to "Main Menu" using the [exit] key.

Please note:

Not every menu point is automatically suitable for each source! Now and then, menu points will be shown (shaded in grey) which you cannot select.

Changing settings

(1) In order to do settings in one of the (sub-) menus, please first select the desired point with the cursor arrow using the [▲] and [▼] keys.

(2) Please confirm this point by pressing the [Enter] key. The active value placed right hand changes its color to "red".

(3) Using the [+] and [-] keys you can now change the value. When entering values requiring numbers you can either adjust the value stepwise using the [+] and [-] keys or enter it directly via the numeric keys on the remote control.

(4) In order to save the newly entered value, press the [Enter] key; to leave without saving changes please simply press the [exit] key.

INPUT SETUP

In the menu "Input setup" the input side of the picture optimizer plus HD (SDI) is configured.

Each of the eleven inputs can be individually configured towards the requirements of the video sources connected to it.

Next to the picture parameters (e.g. brightness) and picture position correction ("Input Alignment") also the TV-Mode, the overscan function and the picture format conversion (aspect ratio) can be defined for each input separately (Input Presettings).

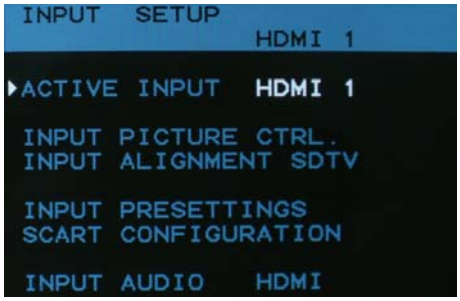
This enables next to others to comfortably change between a 4:3 TV picture of a SAT box to the 16:9 rendition of a DVD player.

Please note:

All settings done in the input setup always refer to the input currently active ("active input") and are automatically saved for this input.

Each video source connected to the picture optimizer plus HD (SDI) needs to be configured separately. Settings done for e.g. "SCART 1" are not applicable for e.g. "YUV 2".

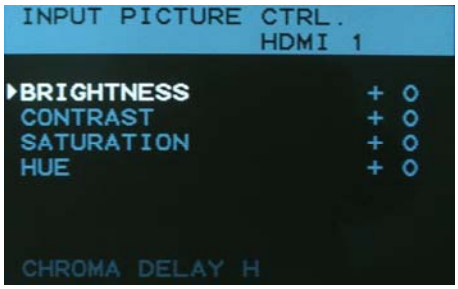
Active input



Here you can choose the desired input using the menu. This function is an alternative to the direct access using the numeric keys on the remote control (see point "video switcher", page 75).

Please select the menu point, activate it by pressing the [Enter] key and then change between the single inputs using the [+]/[-] keys. By pressing [Enter] you confirm the desired input.

Input picture control



This menu point grants you access to a further sub menu, where you can optimally adjust the video signal for the currently active input.

The settings for picture parameters done here only refer to the active input, so every connected source can here optimally be adjusted to your displaying device.

When you select a menu point with [Enter], the menu closes and completely shows the picture of the video source connected to this input. Only a small black bar in the lower picture area shows the selected picture parameter.

By again pressing [Enter] you can activate this and will be able to change it using the [+]/[-] keys. With [Enter] you confirm the desired value and get back to the input picture control menu by pressing the [exit] key. The following picture parameters can be adjusted:

Picture parameter*	**Description**
Brightness	Increasing or decreasing brightness in order to specify the correct black level value
Contrast	Increasing or decreasing contrast **Please note:** Due to a special calculation method you should – when increasing/decreasing contrast – always increase/decrease brightness by the according value to reach the optimum effect of both parameters.
Saturation	Adjusting color saturation (color intensity)
Hue	Adjusting the color graduation (hue and / or tint) in degrees on the color circle. The correction is performed in 1 degree steps.
Chroma Delay	Delaying (shifting) chrominance (color share) versus luminance (brightness share) in steps of 1 *(for S-Video and Composite inputs only)*.

*values predefined in factory setup: neutral

Input Alignment

With this function you adjust the picture position & -size of the video picture for each input individually, in order to compensate technically caused differences of video sources.

It also distinguishes between PAL and NTSC signals, as these signals differ in picture resolution. All settings done are therefore saved separated between PAL and NTSC for each input.

When you select the menu point "Input Alignment", a sub menu will open, in which you can select the following values and change/confirm them following the learned scheme:

Input Alignment*	Description
Input H Position	Changing the horizontal picture position for the active input
Input V Position	Changing the vertical picture position for the active input
Input H Size	Changing the horizontal picture size for the active input
Input V Size	Changing the vertical picture size for the active input

*values predefined in factory setup: neutral

Please note:

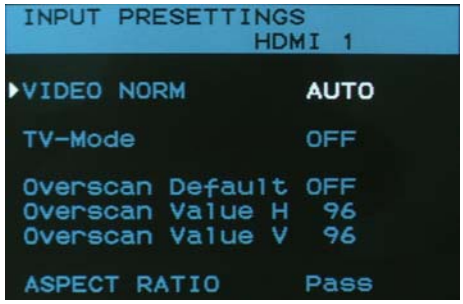
The settings are always valid for the currently active input and the kind of signal connected to it (PAL or NTSC). In order to adjust another input, this first needs to be activated and transmit a PAL or NTSC signal.

The preset values fit most of the video sources. As there is no common standard available here a small correction may be necessary for your connected devices.

Input Presettings

With this point you open a further submenu, over which certain functions for the at present active entrance become preset.

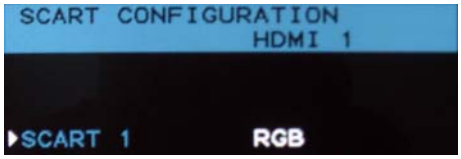
Each here preset function can be switched on and/or off also manually over the direct keys of the remote control. If one changes between the inputs, always the pre-defined values are first active here.



Presetting	Adjustable values	Function/description
Video Norm	AUTO* / PAL / SECAM / NTSC	Adjusts the video standard for this input firmly.
TV-Mode	ON / OFF*	TV mode for this input always activated and/or deactivated.
Overscan Default	ON V=H / ON H/V / OFF*	Overscan-function for his input always ON (V=H), ON (H/V) or OFF. In position "ON V=H" it will be "zoomed" symmetrically into the picture, the percentage of V corresponds thus accurately to the value of H (V=H). During the input it is sufficient to enter the desired value only in OVERSCAN VALUE H. In position "ON V/H" it will be "zoomed" separately after user default horizontal and vertically differently strongly into the picture. The percentage of V and the percentage of H can be differently selected. **Note*:*** If as Overscan default "OFF" was selected, optionally the Overscan activatable with the direct function key [OS] is symmetrically preset (ON V=H). I.e. over [os] the key a Overscan with the value entered under OVERSCAN VALUE H is activated.
Overscan Value H	100%* -70%	Here one will define, over like much the Overscan function "zooms" horizontal (H) and vertically (V) into the picture and/or the edge will be cuted: Factor 100% means 0% contour trimming, 70% accordingly 30% contour trimming.
Overscan Value V		
aspect ratio	Pass*, -33%V, -33& H&V, +33% V, -33%H	Specifies, which is pre-defined aspect ratio for this entrance

*) factory-installed values

SCART Configuration



In this sub menu you can adjust the basic settings for input functionality.

These settings apply to all inputs and therefore are NOT saved for each input separately.

Input Setup	Adjustable values	Function / description
SCART 1	RGB* / Composite	Switches the SCART 1 input between the input signal format "RGB" and "Composite".

*) values predefined in factory setup

"SLEEP TIMER"

A turn off timer can be activated for ensured turning off and as a protection against "burnin-in". In the main menu, you will find the function „sleep timer" directly in the bottom line.

Here you can activate an automatic turning off of the picture optimizer plus HD (SDI) in 30 minute intervals – up to a maximum of 2 hours and 30 minutes. For easy control of the remaining playing time the remaining time is displayed in the main menu to the exact minute. Optionally, displays and projectors can also be turned off as well via an unoccupied RS 232 interface.

ASSIGNMENT OF THE AUDIO SOURCES

For each active video input, a corresponding audio source can be assigned via the input setup menu. The sound will the be distributed over the HDMI output and the digital sound outputs.

For each HDMI input, sound signals can be entered optionally either via HDMI or separately via Toslink / Coax (sensible if, for example, the DVD player only offers one DVI output and the audio signals are transferred separately.)

Separate sound inputs (Toslink and Digital Coax) are available for the analogue inputs and SDI inputs. This way, the sound of a source device without an HDMI output, for example, can be entered. Picture and sounds are transferred via cable via HDMI on the output side.

The audio signals are always available in parallel at all audio outputs, meaning via HDMI as well as via the separate sound outputs Toslink and Digital Coax.

Notice: Many displays will only accept a PCM signal (stereo sound). If the audio output is set to a multiple channel sound like Dolby Digital (AC-3) or DTS, many displays remain silent.

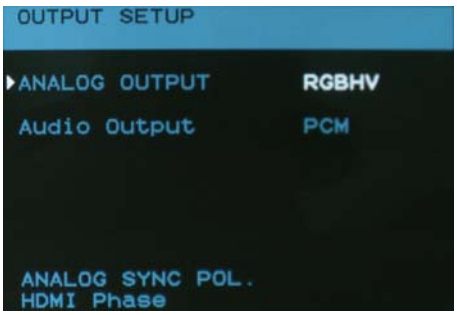
OUTPUT SETUP

In the menu "Output Setup" the picture optimizer plus HD (SDI) is adjusted towards the connected displaying device(s) and the different outputs configured accordingly.

Analogue output signal

In the menu "Output signal"you define which signal format is distributed by the four outputs of the picture optimizer plus HD (SDI).

Especially for the HDTV resolutions 720p and 1080i the signal formats with "tri-level sync" have been integrated according to SMPTE standards.



The following output signal formats are available:

Signal format	Usable for output	Sync	Remark
RGBHV*	5 x BNC, VGA, DVI	H/V-Sync	VESA standard (PC)
RGBs	5 x BNC, VGA, DVI	common Sync	SMTPE standard (Video)
RGsB	5 x BNC, VGA, 3 x Cinch, DVI	bi-level sync on green	SMTPE standard (Video)
RGsB-3	5 x BNC, VGA, 3 x Cinch, DVI	tri-level sync on green	SMTPE standard especially for HDTV
YUV	5 x BNC, VGA, 3 x Cinch, (DVI)	bi-level sync on luminance	SMTPE standard (Video)
YUV-3	5 x BNC, VGA, 3 x Cinch, (DVI)	tri-level sync on luminance	SMTPE-standard especially for HDTV
HDMI	DVI+HDMI	-	digital SMTPE standard

*) value predefined in factory setup

Note: For the digital HDMI output the signalformat must not be configured – this will be detected automatically.

Audio output

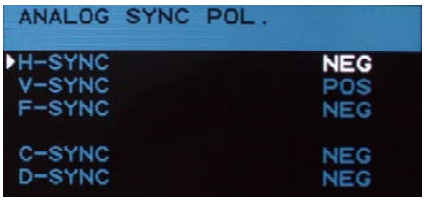
Here you can switch between PCM sound and multiple channel sound.

Notice:

Many displays only accept a PCM signal (stereo sound). If the audio output is set to multiple channel sound like Dolby Digital (AC-3) or DTS, many displays remain silent.

Analogue SYNC polarities

Analog displaying devices such as CRT projectors eventually need different SYNC polarities than the preset values.



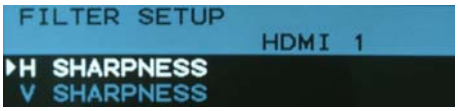
SYNC polarities	Adjustable values	Description
H-SYNC	NEG* / POS	Changing the polarity of the horizontal sync
V-SYNC	NEG / POS*	Changing the polarity of the vertical sync
F-SYNC	NEG* / POS	Changing the polarity of the field sync (interlaced)
C-SYNC	NEG* / POS	Changing the polarity of the common sync
D-SYNC	NEG* / POS	Changing the polarity of the digital sync

*) value predefined in factory setup

FILTER SETUP

In the sub menu "Filter Setup" different optimizing functions of the picture optimizer plus HD (SDI) can be adjusted.

This can be necessary, depending on kind and quality of the video signal and / or displaying device, in order to reach an optimum in picture quality.



If you select a menu point within the "Filter Setup" with [Enter] the menu closes and completely shows the picture of the active video source. Only a small black bar in the lower picture area shows the selected menu point.

H Sharpness / V Sharpness

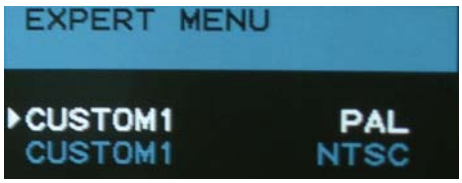
In order to compensate possible weaknesses in sharpness of the video signal and / or the displaying device, with this function picture sharpness can be readjusted and / or corrected utilizing a horizontal and vertical focus regulation.

Sharpness	Description
H Sharpness	Increasing or decreasing horizontal sharpness
V Sharpness	Increasing or decreasing vertical sharpness

values predefined in factory setup: neutral

EXPERT MENU

The "Expert Menu" offers various settings for individual adjustment of your picture optimizer plus HD (SDI) towards your displaying device(s). Here you can change the frame rates for each resolution and manage one user specific resolutions for both PAL and NTSC signals.



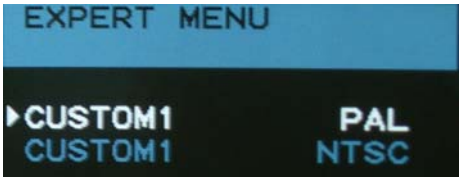
Settings in the "Expert Menu" should only be performed by experienced users, as disoperation is likely to lead to damages at connected displaying devices.

ATTENTION: Changing the preset values for the frame rates and definition of individual resolutions (custom resolutions) in rare cases can lead to irreparable damages at connected displaying devices. In any case please take into account the maximum values your displaying device can process and in neither case exceed those. Please refer to the user / instruction manual of your displaying device for further information.

CUSTOM 1 FOR PAL / NTSC

In these menu points you define the freely configurable "custom" resolutions for PAL and NTSC signals.

With a "custom" resolution you can utilize the power of your digital displaying device(s) to an optimum extent, as you can provide the video signal exactly with its "native resolution". If the displaying device supports this, it does not need to adjust the signal at all (e.g. scaling, application of filters) and can render the picture optimizer plus HD (SDI) signal 1:1.



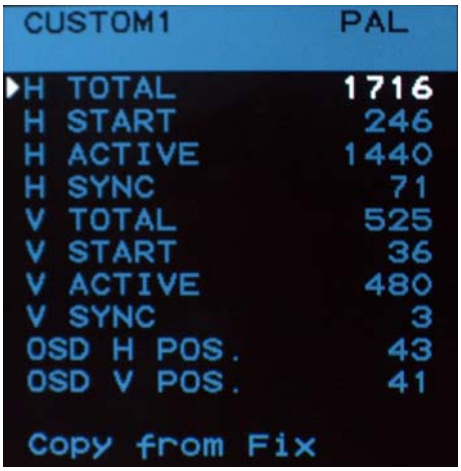
The configuration of such a self defined resolution however requires some knowledge and unfortunately not all digital displaying devices support video signals with their "native resolution" (especially not at PAL / 50 Hz frame rate).

If the screen stays black after having activated a custom resolution, in most cases it only helps to test, over which other settings and / or input signals (e.g. YUV instead of RGB HV) your displaying device accepts its "native resolution".

ATTENTION: Entering incorrect values can in rare cases lead to irreparable damages on your displaying device. Never enter values without being sure that these values are suitable for the connected displaying device. Please refer to the user / instruction manual of your displaying device for further info.

The following values need to be defined for a "custom resolution":

custom 1	Description
H Total	Number of pixels per line (outside framing)
H Start	Horizontal starting point of the picture
H Active	Active width of the visible picture
H Sync	Length of the horizontal sync impulse
V Total	Number of lines per picture (outside framing)
V Start	Vertical starting point of the picture
V Active	Active height of the visible picture
V Sync	Length of the vertical sync impulse
OSD H Pos.	Horizontal position of the on-screen menu
OSD V Pos.	Vertical position of the on-screen menu



values predefined in factory setup: custom 1: 480p

After the input of the values in the "custom 1" menu the "Expert menu" must be closed and the redefined resolution custom 1 must be selected over remote-control [res] key once again (= to be activated).

Function "copy from fix"

With the "copy from fix" function you can load the 22 predefined resolutions of the picture optimizer plus HD (SDI) into one of the four custom resolutions (PAL /NTSC) and if necessary modify them afterwards.

This enables that a predefined standard resolution can be adjusted to the requirements of a "native resolution" in an easy way. The indicated values are overwritten with "copy from fix".

OTHER OPTIONS

The menu "Other Options" offers different basic functions and / or configurations for the picture optimizer plus HD (SDI).

Reset

With the "Reset" function you can restart the processor of the picture optimizer plus HD (SDI) without losing any settings. A reset can maybe necessary, if the device "hangs up" due to unsuitable configuration settings (comparable to a PC).

Factory

The "Factory" function rolls back all adjustable functions and parameters of the picture optimizer plus HD (SDI) to its factory settings and so sets the device back to its original status.

ATTENTION: All performed settings incl. the user presets are irretrievably lost after Factory Reset!!

RS-232-Rate

In this menu point you can adjust the data transfer rate of the RS-232 interface for serial control signals to external devices (more on that from page 93 on).The following values are selectable: 9600 Baud, 19200 Baud, 38400 Baud. Value predefined in factory setup: 9600 Baud

Display DIM

Over this menu option the brightness of the display is adjusted: Possible values are: 100%, 75%, 50%, 25% and 0%. With the call of a menu the display brightness always is at 100%..

Display Aspect

In order to reproduce the picture in the correct display ratio (e.g. for showing non-amorphous 4:3 TV shows on a 16:9 panel), the „ar" button (aspect ratio) is available for picture presentation on 16:9 playback units with three pre-adjusted functions V+33%, H-33% and *Pass*

The pre-adjustment can be changes correspondingly in the menu display aspect for presentation on 4:3 devices so that the „ar" button is newly occupied and offers the three relevant functions V-33%, H&V-33% as well as *Pass*.

All five functions (V+33%, H-33%, V-33%, H&V-33% and Pass) can be taken over with the third selectable option „all". You will find further information on aspect ratio on page 103

Bootloader HDMI

This function is only relevant for upgrading a possible new firmware. Further information on firmware upgrade on page 95. Please only activate this function when upgrading!

Screensaver (only relevant with SDTV inputs)

As protection against "burn-in" sensitive picture devices, the picture optimizer plus HD (SDI) checks the picture contents over all picture inputs for standing pictures. If standing pictures are permanently recognized over a time span of 3 minutes, the screensaver will turn itself on, e.g. to protect a plasma display.

The picture will then become entirely black and a moving time display will be activated (countdown 7 minutes to zero). If the standing picture continues, the scaler will automatically turn off after 7 minutes.

The screensaver function will be automatically deactivated as soon as the picture contents again change continually. Each function summon via IR remote control also deactivates the screensaver function at any time (e.g. "exit" button).

In the menu "OTHER OPTIONS" the screensaver function can be activated or deactivated. For security reasons, the screensaver function is activated after a factory reset.

Notice:

Some DVDs jump to an animated title menu at the end of a film, which contains partial motion pictures. In this case the screensaver cannot always automatically detect „standing pictures". The screensaver function is not activateable at the HDMI inputs.

THE OPTIMUM CONFIGURATION

CONNECTION OF VIDEO SOURCES & DISPLAYING DEVICE(S)

If possible, we recommend to always use the highest quality connection variant in order to achieve the best possible picture optimization and –quality.

If a video source has more than one interface, normally the following order regarding picture quality applies (starting with the highest quality):

- SDI (= more or less loss-free digital transmission)
- HDMI / DVI
- YUV (3x Cinch) or SCART with RGB (depending on the device either RGB or YUV delivers the best signal)
- S-Video
- FBAS

For the displaying device the following order of connection variants applies (starting with the highest quality):

- HDMI / DVI (= more or less loss-free digital transmission)
- RGB HV (RGBs, RGsB) via VGA or 5 x BNC

Please note:

The picture optimizer plus HD SDI is a fully digital line doubler and scaler. By utilization of the digital interfaces SDI (input) and HDMI / DVI (output) all digital/analog and analog/digital conversions involving losses are no longer applicable. In combination with digital displaying devices (LCD- & DLP projectors, LCD- & plasma displays) and digital video sources (DVD, digital SAT-/cable receivers) the digital chain is closed – and therefore the best possible signal processing is achieved.

CONNECTION OF THE CINEMATEQ FLATSCREEN CT-50 HD / CONTROL BOX

The picture optimizer plus HD (SDI) can also be used as a so called control box or respectively picture center for the cinemateq flatscreen CT-50 HD. The following points are important for operation and are only valid for this device combination:

- The control box must be connected to the flat screen via the DVI output with the delivered DVI cable. Alternately, a different DVI cable may be used, if it is a so called fully against high voltage protected DVI cable.

- A special picture resolution is pre-adjusted for the CT-50 and can be accessed by the remote control („res"-> select „CT-50"). As the CT-50 only works with this resolution the bypass function of the HDMI inputs on the control box cannot be used.

- Before the first use, we highly recommend only turning on the control box first and activating the CT-%= resolution – without turning on the flat screen or it being connected to the control box!

  Please check this adjustment on the control box display, which must be displayed as shown on the right

- Only after the activation of the CT50HD resolution, should the control box be connected to the flat screen via DVI.

Please note:

In order to maximally reduce a possible "burn-in" we recommend a screensaver (with all SDTV video passes) or respectively activating and using the sleep timer function (HDTV picture material).

When this CT-%= resolution is activated, only the DVI output is activated, as the CT-%0 necessitates a very special timing, which third devices cannot display. For this reason, the HDMI output on the control box is also without function.

It is also guaranteed with the CT-50 resolution that the display will turn itself on as soon as it receives a signal from the control box. This occurs with a short time delay. This is not an error, but technical necessity in order to have a stable picture. The display turns itself of as soon as the control box is turned off.

RESOLUTION & FRAME RATE

For digital projectors & plasmas

When connecting digital projectors and plasmas we recommend the following resolutions, starting with the highest picture quality:

Notice: You will find the corresponding values for analogue playback units in the appendix:

Resolution	Frame Rate for „TV“ (PAL/NTSC)	Frame Rate for „Kino“ (PAL/NTSC)
Native resolution* (see also „custom resolution“)	50 / 60 Hz	50 / 60 Hz
HDTV 720p	50 / 60 Hz	50 / 60 Hz
HDTV 1080i	50 / 60 Hz	50 / 60 Hz
SXGA*	50 / 60 Hz	50 / 60 Hz
XGA*	50 / 60 Hz	50 / 60 Hz
Doubling	50 / 60 Hz	50 / 60 Hz
SVGA*	50 / 60 Hz	50 / 60 Hz

*) only in conjunction with DVI or RGB HV (RGBs, RGsB) connection, NOT with YUV!

Please note:

The YUV interface is a pure video interface for resolutions according to video standards (SMPTE) and normally NOT suitable for PC resolutions (SVGA, XGA, etc.) or "native" resolutions!

Only a few modern displaying devices show both their native panel resolution and various PC resolutions without judder at 50 Hz! Most of the devices however using these resolutions only work with a 60 Hz frame rate internally. This leads to "judder" and / or "tearing" in picture rendition. In these cases video resolutions such as doubling, HDTV 720p or HDTV 1080i deliver rather reasonable results.

Digital projectors (LCD, 1-Chip-DLP, LCOS) always show slight moving artifacts when watching TV pictures. Increasing the frame rate of 50 / 60 Hz normally is not reasonable for these – contrary to analog devices – sluggish displaying devices. This neither eliminates wide screen flickering, as digital devices technically caused do not show a 50 Hz flickering anyway.

Attention: Please take into account the maximum specified picture resolution and / or frame rate of your displaying device! Selecting a higher picture resolution and / or frame rate may in rare cases lead to damages at the displaying device!

Some plasma and LCD screens and also older model projectors cannot present a PAL signal without „jolting " and create an internal frame rate conversion. This is due to the internal processing rate of 60Hz devices and is not (!) caused by the picture optimizer.

Even if the picture optimizer plus HD (SDI) delivers a 50Hz signal, these playback units „must“ always „jolt“ when presenting pictures. This is not an error of the picture optimizer plus HD (SDI), but a technical characteristic of the PAL signal which can only be presented at 50, 75 (cinema only) or 100Hz without „jolting“.

PICTURE PARAMETERS & FILTERS

General rule: the better the quality of home cinema components, the less picture „manipulations" are necessary! In praxis however the picture values and the quality of different video sources derive form each other obviously. The picture optimizer plus HD (SDI) for this case offers extensive picture adjustment possibilities in order to ensure an optimum result with all components.

Input Picture Control

The most important picture settings can be found in the "Input Setup" under "Input Picture Control". These settings are performed for each input separately in order to be able to adjust each video source to its optimum extent.

- **BRIGHTNESS** adjusts the picture brightness and defines the lowest black level value. A test picture with a gray scale must reach the deepest black level value, at the same time however dark gray sections must not be swallowed.
- **CONTRAST** defines the grade and dynamics of gray scales. However with a contrast setting that is too strong structures in bright picture areas are "overridden" and / or cut. As CONTRAST hardly changes the black level, normally only minimum corrections of picture brightness are necessary after contrast adjustment.
- **SATURATION** changes the color saturation. Increasing the value to high however overrides the color rendition and should be avoided.
- **HUE** change s the color graduation (for PAL and NTSC) and can be adjusted in order to adapt skin colors. HUE especially regulates the balance between red and green color share.

Please note:
Please take into account, that the function RGB LUMINANCE ROOM in the menu output setup also has an effect on brightness and contrast!

TIP: We recommend, to first of all switch to the input for the DVD player and carefully adjust all picture parameters with the help of test pattern DVDs (e.g. Peter Finzel Testdisc S.E.). The DVD picture may serve as a reference and helps to bring all other inputs to a similar standard!

Filter Setup

These functions also has an effect on all video sources, as they are only applicable to the optimized output signal.

- **H SHARPNESS** regulates the horizontal sharpness value of the picture
- **V SHARPNESS** regulates the vertical sharpness value of the picture

Please note:

In contrary to a sharpness adjustment in the input signal (PAL/NTSC) no stairway steps are caused by emphasizing the video line structure. If choosing a high picture resolution or a HDTV output format the fineness of scaling remains unchanged! Nevertheless you should avoid excessive increasing, in order to exclude unnecessary ringing or double edged contours.

RS-232 CONTROL

OPERATION VIA RS-232

The picture optimizer plus HD (SDI) can be operated with the following serial codes via its RS-232 interface:

Function		Code
Standby	ON	PO
	OFF	PF
aspect ratio conversion	Pass	A0
	-33 V	A1
	-33 H&V	A2
	+33 V	A3
	-33 H	A4
Input	HDMI 1	L1
	HDMI 2	L2
	HDMI 3	L3
	HDMI 4	L4
	Scart 1 (RGB)	I1
	Scart 1 (Composite)	I9
	Composite 1 (SDI 1)	I2
	Composite 2 (SDI 2)	I3
	S-Video 1	I4
	S-Video 2	I5
	YUV 1	I6
	YUV 2	I7
Specials	TV-Mode ON	K0<CR>EX<CR>
	TV-Mode OFF	EX<CR>
	TV-Mode toggle	TV
	Option A	MI
	Option B	HA

All codes need to end with <CR> (chr$13) in order to be executed (not for PC).

The serial port is set to 9600 baud (8 bits, 1 stop bit and "no parity") in factory setup, however can be converted to 19200 baud and / or 38400 baud. More on that on page 94.

RS-232 CONTROL FOR OTHER DEVICES

The picture optimizer plus HD (SDI) can also transmit ON/OFF command codes to other devices like plasma or projector via its RS-232 interface.

In order to switch your projector or plasma on or off using a serial command from the picture optimizer plus HD (SDI), your picture optimizer plus HD (SDI) first needs to be programmed with the according commands for your projector or plasma. This normally possible with every PC or Macintosh. The following explanation refers to a PC with Microsoft® Windows operating system.

Preparation of programming

(1) First look up in the user manual of your displaying device, which RS-232 commands it requires for switching on and / or off. In the following "P1" for switching on, "P2" for switching off are used for demonstration purposes.

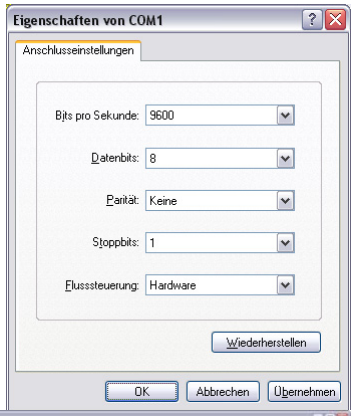
(2) Connect your picture optimizer plus HD (SDI) to your PC (Windows 95 and higher) using a RS-232 cable. If possible not via USB to RS-232 adapter, but via the "classical" serial COM interface.

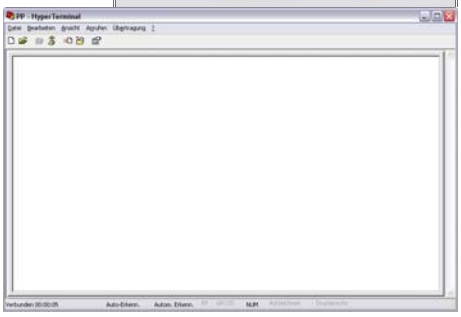
(3) Start the program HyperTerminal (can usually be found in the start menu under accessories ➔ communication. If this is not the case you need to install this utility).

(4) Enter a new name for the connection (e.g.: "projector") and click [Enter].

(5) In the next window please refer to the according interface under "create connection over", e.g. COM1, and click [Enter].

(6) In the next window please adjust the values according to the screenshot on the right hand and click [Enter]. Now the program window appears.





Programming the command codes

(1) Now enter PO (followed by [Enter]), in order to switch "on" the picture optimizer plus HD (SDI) via the RS-232 connection.

(2) Programming the "on" code: Enter SOP1 (followed by [Enter]). "SO" is the programming command for the "on" command of the picture optimizer plus HD (SDI), "P1" our sample command for switching on the displaying device.

(3) Programming the "on" code: Enter SFP2 (followed by [Enter]). "SF" is the programming command for the "off" command, "P2" our sample command for switching off the displaying device.

(4) The commands "P1" for switching on and "P2" for switching off are now programmed. In order to verify now switch off the picture optimizer plus HD (SDI) using the remote control. The program window of the HyperTerminal now shows "P2". Now please switch on the picture optimizer plus HD (SDI) again using the remote control, the program window now shows "P1".

You can now connect the projector/plasma to the serial interface of the picture optimizer plus HD (SDI). Therefore – depending on the projector/plasma - use a zero-modem or a standard serial cable. When you switch on and / or off the picture optimizer plus HD (SDI), the projector/plasma is automatically switched on and / or off.

Please note:

When controlling the picture optimizer plus HD (SDI) via a control system (such as AMX) via RS-232, it can not transmit command codes to other devices. The control of other devices (e.g. projector) then also needs to be performed via the control system.

FIRMWARE UPGRADE

The picture optimizer plus HD (SDI) can always be updated to the newest standard by renewing the internal firmware (control software).

Step 1 / Preparation:

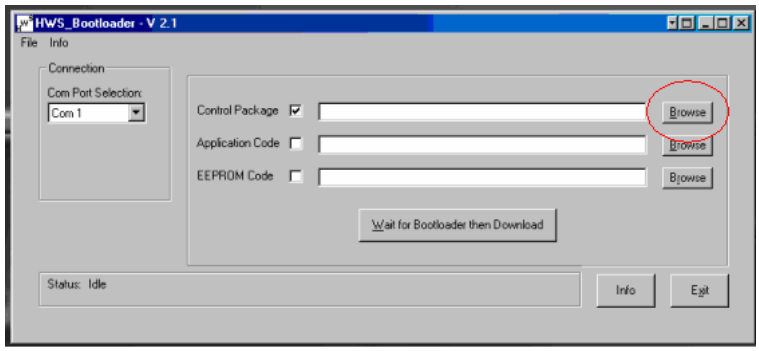
You need:

- **picture optimizer plus HD (SDI) or**
  picture optimizer plus (II)(SDI) with „HDMI & audio upgrade kit“
  (in the following “ppHD” mentioned)
- **PC**
  with internet access, serial interface and operating system Microsoft Windows (starting from Windows 95 and more highly)
- **Boot loaderprogram and firmware software**
  In the internet under www.cinemateq.com in the menu „Support-Center“ --> Support for picture optimizer --> Firmware Upgrade --> picture optimizer HD -> Download „ Complete package “
- **Serial cable**
  = RS 232 cable to connect the PC with the ppHD
- **cinemateq remote control (silver edition)**
  Here primarily the “Menu”, “Enter” and „+ “and „ arrow “-keys

Attention!
Please make sure to save all adjustments on a separate paper as they all will get lost cause of a factory reset after the firmware upgrade!

Step 2: Transfer of the Firmware „base“

1. **at the PC** ==> Unzip the Boot loader program and the firmware data with winzip (www.winzip.com) and store at the PC into a new, regainable file.
2. **at the PC** ==> Install the “Setup.exe” by doubleclick. Setup accomplish and terminate and then open the Boot loader program
3. **at the PC and ppHD** ==> Connect both with RS 232 cable and switch on the ppHD (only with power ON at the back) into Standby mode



4. **at the PC** ==> Open the program Boot loader and click on BROWSE (see red circle in the illustration above), select the file “pp_base_vXX” and open
5. **at the PC** ==> Click "Wait for Boot load“ once
6. **at ppHD** ==> Push the „ON“ button on the remote-control. The Download begins automatically; the LED flashes red/blue, the display remains dark.

7. **To control at the PC:** ==> In the status indication "Flash file" -> a Countdown begins.
8. **at the PC** ==> click after completion "OK" once
9. **at ppHD** ==> complete the following steps by remote control:
    a. Switch **OFF**
    b. then again turn **ON**
    c. Press button **Menu** and Enter
    d. Navigate to **Other options** and Enter
    e. Navigate to **Factory** and Enter
    f. There select „**YES**" and confirm with ENTER.
    g. The ppHD turns "off" for a very short time and "on" again

Step 3: Transfer of the Firmware „digital"

1. **at the PC** ==> Click in the Boot loader program BROWSE and select the file "**ppHD_digital**_vxx" and open it.
2. **at the PC** ==> Click once "**Wait for Boot loader**"
3. **at ppHD** ==> complete the following steps by remote control:
    a. Press button **Menu**
    b. Navigate by arrow button to **Other Options** and ENTER
    c. Navigate by arrow button to **Bootloader HDMI** and ENTER
    d. Navigate by „+" button Taste from No to **YES** and confirm with ENTER
    e. The firmware now will be updated.
    f. **ATTENTION**: In no case the ppHD may be separated now from the current supply!
4. **at the PC** ==> For control: in the menu of the Bootloader program a countdown in the status indication "Sending Flash file" begins (to be seen at the bottom left hand corner).
5. **at the PC** ==> after the download is finished, confirm by clicking "OK".
6. **at ppHD** ==> complete the following steps by remote control:
    a. Switch **OFF**
    b. then again turn ON and navigate to **"menu" --> "Other options" -->"Factory".**
    c. There select „YES"and confirm with ENTER.
    d. **Finished**! ==> To control: When starting the ppHD again, the new firmware version number XXX appears in the display

In case of any problems, please contact our support hotline.

TIPS FOR ERROR CORRECTION

Detailed hints & tips for error correction and problems handling can be found in the internet under www.cinemateq.com in the Support Center section. Here are the most important tips:

Problem	Tip
No picture is shown	**Basically:** First, please always check the on-screen status info: If the status info appears, the video signal on the input is missing. If there is no signal on an input, the yellow insert: NO Signal! appears for about 3 seconds. Please check the video source and the cable connections. You see the error code "sync out of range": The displaying device doesn't recognize the selected resolution and / or the selected resolution is too high. Change to a lower resolution and / or select a compatible resolution. **If connected via YUV (3 x Cinch or VGA):** Check Cinch connector (YUV) for right allocation: green = luminance signal = Y, blue = color difference signal Pb = U, red = color difference signal Pr = V. Check your displaying device for correct input selection (RGB or YUV color space?). Check picture optimizer plus HD (SDI) for correct output signal format "YUV" in the output menu. Normally PC-resolutions such as SVGA or XGA can not be transmitted compatibly via YUV. YUV has been designed for pure video formats such as doubling (576p/480p) and HDTV signals (720p/1080i)! Many older plasmas and some projectors unfortunately can not recognize and or compatibly show HDTV signals. Some devices only show American HDTV signals with 60 Hz. In order to check this, best is to insert a NTSC-DVD and test the two formats 720p/1080i. The conversion of PAL material to HDTV60Hz however is only a less-than-ideal solution, as the resulting picture shows judder (so called "50 to 60Hz pull down judder"). We recommend to go back to a standard resolution such as "doubling" in this case. **If connected via HDMI / DVI:** Check HDMI / DVI cable: These cables are only specified for connections of 5 to a maximum of 10 meters and in neither case may be bended nor folded! Please only exchange cables if the device is completely switched off and disconnected from the main power supply! Some older plasmas only have PC input receivers, i.e. signals with 50 Hz are not recognized. Please ask the manufacturer if this problem is known and / or an update is possible. Please note: Some projectors have a switchable DVI function like PC, HDTV, RGB color space, YUV color space. Therefore please refer to the user manual of your projector! TIP: In case the DVI output is activated a correct RGB,HV signal is also available at the analog VGA and / or 5 x BNC output socket of the picture optimizer plus HD (SDI). This can be controlled using an analog PC monitor. A CRT monitor – in case of problems – normally always shows a stable picture and on-screen menu and itself produces no judder, i.e. it is an ideal test monitor! **If connected via RGB HV (VGA or 5 x BNC):** Check the output signal format, your displaying device can render compatibly (RGB,HV, RGBS, RGsB, RGsB 3 tri level sync). Also check the polarity of your sync-signals (menu OUTPUT > SYNC POLARITIES). Cabling: Check the correct allocation of H- and V sync and the RGB allocation, when connecting via 5xBNC socket. Some older plasmas only have PC input receivers, i.e. signals with 50 Hz are not recognized. Please ask the manufacturer if this problem is known and / or an update is possible. Please note: Some projectors have a switchable DVI function like PC, HDTV, RGB color space, YUV color space. Therefore please refer to the user manual of your projector!

	TIP: In case the RGB output signal is activated a second RGB,HV signal is available at the second analog RGB output socket (e.g. VGA) of the picture optimizer plus HD (SDI). This can be controlled using an analog PC monitor. A CRT monitor – in case of problems – normally always shows a stable picture and on-screen menu and itself produces no judder, i.e. it is an ideal test monitor! **Important notice:** Digital signals entered via HDMI cannot be reproduced analogue.
Problem	**Tip**
Picture is displayed with "wrong colors" or "flashes"	**If connected via YUV (3 x Cinch or VGA):** Check Cinch connector (YUV) for right allocation: green = luminance signal = Y, blue = color difference signal Pb = U, red = color difference signal Pr = V. Check your displaying device for correct input selection (RGB or YUV color space?). Check picture optimizer plus HD (SDI) for correct output signal format "YUV" in the output menu. Check in the setup of your video source, if the connector used is by mistake set to RGB instead of YUV. **If connected via DVI:** Check the setting for the output signal format: If e.g. the format RGB HV is active instead of DVI, picture errors can appear with higher resolutions such as quadrupling or tripling. Check DVI cable: DVI cables are only specified for connections of 5 to a maximum of 10 meters and in neither case may be bended nor folded! Mechanical loads can lead to phase errors or completely missing base colors in the picture even if all connections seem to be working. Please only exchange DVI cables if the device is completely switched off and disconnected from the main power supply! Use PC monitor as test monitor, it shows the digital / analog converted DVI picture with the right colors (RGB HV via VGA)! In case you see colored pixels in the picture, the selected output resolution in too high. Some cables and DVI input receivers are not tested for high bandwidths and produce color errors. Please try a lower resolution, e.g. doubling. With long DVI / HDMI cable lengths, a inferior conduction leads to flashes in the picture, so that the digital video connection must be replaced.
Wrong picture position and / or picture format (geometry)	**Basically:** In case of slightly "oval distorted" geometry: Some displays don't have a true 4:3 or 16:9 picture format. A SXGA display for example shows a 5:4 format, a WXGA display with 1280x768 Pixel shows a 15:9 format. Please compensate the wrong geometry by using the output setup function "ASPECT V. Corr.". **If connected via YUV (3 x Cinch or VGA):** Normally PC resolutions such as SVGA or XGA can not be compatibly transmitted via YUV. YUV is designed for pure video formats such as doubling (576p/480p) and HDTV signals (720p/1080i)! Not all displaying devices are prepared for video signals compliant to latest SMPTE standards (European HDTV/50Hz) as generated by the picture optimizer plus HD (SDI). If the HDTV picture appears compressed in width and shows a black bar on the right edge, changing to the "old" NTSC variant for HDTV/60Hz signals may help: load 720p to "Res. custom2" and change H Total in the expert menu from H Total = 1920 to H Total = 1650. **If connected via DVI:** Please select a resolution according to video standards (doubling, 720p, 1080i). A secure, tested functionality is most probable here. Unfortunately only some digital flat screens available today can display their native resolution without judder with a PC resolution. Example: a WXGA plasma with 16:9 panel is provided with the native resolution 1366x768, but displays the 16:9 picture in 4:3 format, as it assumes a 4:3-PC application and is not prepared for 16:9 video. Modern digital flat screens however are also prepared to show their native resolution with 50 and 60 Hz via DVI.

Problem	Tip
Picture shows "judder"	**Basically:** ▪ Some displaying devices can recognize a signal with 50 Hz, however process it internally with 60 Hz. Besides permanent judder there are often "shifting edges" (so called "tearing") in moving picture content. In this case there is neither compatibility to HDTV/50Hz signals. Please note: In order to control judder artifacts please use test DVDs (e.g. Peter Finzel Test Disc S.E.) and an analog CRT monitor! Analog PC monitors do not generate moving artifacts themselves and are therefore perfectly suitable for controlling signal quality. A inexpensive CRT is a HDTV compatible monitor normally able to show nearly every progressive resolution via RGB HV (just picture position and geometry are changing depending on resolution). ▪ Please refer to the hints in our user manual, which frame rates are certified for judder free operation for TV or cinema in PAL or NTSC. Attention: digital displays – contrary to analog displaying devices – will never show any higher frame rates than 50 Hz (60 Hz for NTSC) without judder! ▪ Some projectors with a 15PIN socket suitable for YUV signals only show a correct video function if the 15PIN cable doesn't transmit H- and V-Sync signals (PC-Mode is active in case of H,V-Sync). An adapter cable 15PIN to 3xBNC with Cinch adapter and / or a YUV adapter 15PIN to 3x Cinch help. Please only connect the three Cinch cables marked red, green and blue to the YUV output of the picture optimizer plus HD (SDI) (Y= green, U = blue, V= red) ▪ **Please note:** The preset for the resolution 480p allocated to the [custom 1] key is 60 Hz. In case you want to load another resolution here (Copy from fix), you need to change the frame rate to 50 Hz.
Other	**Picture "not stable" / "picture runs through"** Please check the Sync signal. Some displaying devices can better cope with the standard signal YUV with bi-level sync, others expect the tri-level sync setting designed for HDTV signals. **Picture format / overscan not ideal** If possible please deactivate all picture format and / or overscan settings of the displaying device. In case no full size picture (filling the format) is displayed, you eventually need to zoom into the picture using the overscan function. Some displaying devices have a overscan preset, that can not be deactivated, e.g. when using the "doubling" picture format. You can try changing to a HDTV resolution (720p/1080i), which is normally shown without any cut-off (100 % overscan). Some DVD players and video sources already deliver a output picture with black bars. Our scaling is optimized towards signal sources with untrimmed picture material (100 % overscan). In case of a cut output picture you need to zoom into the picture using the overscan function of the picture optimizer plus HD (SDI) in order to fill the black bars.

ADDENDUM

Connection picture optimizer plus HD (SDI) with analogue displaying device

Next configure the used outputs interface to the signal format required by your displaying device.

The picture optimizer plus HD (SDI) offers 4 output interfaces with different signal formats (see table).

First, please check, if the selected interface can transmit the signal format required by the displaying device (3 x Cinch e.g. can not transmit a RGB HV signal).

If the (cable-) connection between picture optimizer plus HD (SDI) and displaying device is correct (consider socket allocation!), now adjust the required signal format via the output setup:

signal format	via interface
RGB HV (factory setting)	5 x BNC socket VGA socket
RGBs	5 x BNC socket ("R", "G", "B", "H" only) VGA socket
RGsB RGsB 3 (tri-level sync)	5 x BNC socket ("R", "G", "B" socket only) 3 x Cinch socket (Y = "R", U = "G", V = "B") VGA socket
YUV YUV 3 (tri-level sync)	3 x Cinch socket 5 x BNC socket (R = "Y", G = "U", B = "V") VGA socket
HDMI	DVI-D and HDMI socket

(1) Therefore please press the [menu] key on the remote control once. The "Main Menu" selection appears in the display.

(2) Select "Output Setup" using the [▲] / [▼] keys and confirm this by pressing the [Enter] key.

(3) Now select the menu point "Output signal" using the arrow keys again and press the [Enter] key.

(4) The currently set value ("RGBHV") is now highlighted in a blue bar, select the desired value (e.g. "HDMI") with the [+] / [-] keys and activate it by pressing the [Enter] key.

(5) By two times pressing the [exit] key you close all menus and get back to the status info.

The status info in the display changes to: OUT: HDMI

Now the connection video source ➔ picture optimizer plus HD (SDI) ➔ displaying device is configured according to your needs and the displaying device should show the video source's picture signal.

In case you can't see the video source's picture signal yet, please check the following:

Do you see on screen the menu, if you press the key (menu]? (to been closed with (menu] key)

In case "Yes", the connection to the displaying device is in any case available, i.e. your video source

- either transmits no signal,
- is connected to another (than the currently active) input
- or the connection is not correct (e.g. SCART RGB / Composite conversion, YUV with exchanged cables or similar) and / or a cable is possibly broken.

In case "No", the displaying device can not yet render the picture optimizer plus HD (SDI) output signal. The following reasons can apply:

The displaying device only recognizes an input with active signal automatically immediately after having been switched on (manually select the input at the displaying device).

A faulty connection (e.g. YUV with exchanged cables or even a defective cable) and / or the selected signal format (e.g. RGB HV) is not supported by the displaying device.

Some digital displaying devices via their DVI or VGA input do not "understand" the "doubling" (576p / 480p) resolution at 50 Hz that is preset in factory set up at the picture optimizer plus HD (SDI). Next you will learn, how the resolution is adjusted to your displaying device.

RESOLUTION & FRAME RATE

For analog CRT monitors and CRT projectors

We recommend to connect analog CRT monitors and CRT projectors to the VGA or 5 x BNC socket using a RGB HV (RGBs, RGsB) signal format. The following resolutions deliver the best results, starting with the highest picture quality:

Resolution	Frame rate for "TV" (PAL/NTSC)	Frame Rate for "cinema" (PAL/NTSC)
HDTV 1080p	50 / 60 Hz	50 / 60 Hz
Quadrupling	50 / 60 Hz	50 / 72 Hz
Tripling	50 / 60 Hz	75 / 72 or 90 Hz
HDTV 720p	50 / 60 Hz	75 Hz(100 Hz) / 72 Hz (90 or 120 Hz)
Doubling	50 / 60 Hz	75 Hz(100 Hz) / 72 Hz (90 or 120 Hz)

Please note:

TV camera material (e.g. sports broadcasts) only at a frame rate of 50 Hz for PAL and / or 60 Hz for NTSC shows an optimum sharpness level without judder in moving pictures.

A frame rate of 100 Hz for PAL and / or 120 Hz for NTSC eliminates the wide screen "flickering" for movie pictures, however a visible "doubled edge" results for all moving TV pictures.

Attention: Please take into account the maximum specified picture resolution and / or frame rate of your displaying device! In case selecting a higher picture resolution and / or frame rate the displaying device is overloaded and may be damaged!

With the resolutions 720p, 1080i and 1080p it is possible to receive a horizontally transposed picture (due to the SMPTE norm). In this case a special custom 1 resolution can be adjusted. Please consult a cinemateq specialized retailer or support for this.

Resolution

After having configured the picture optimizer plus HD (SDI) towards the requirements of your connected devices and the displaying device shows the video source's picture signal, you should set the "right" resolution for your displaying device.

The major target in basic configuration is to get an acceptable picture. You will learn more about how the picture optimizer plus HD (SDI) is adjusted to your displaying device in the best possible manner in regards to connection, resolution and frame rate under the point „The optimum configuration" (from page 89 on).

If you already see a picture signal on the displaying device, please go to the point "Adjustment of the right resolution" (page 91). In case there is no picture yet, you should first detect the reason for that before selecting different resolutions.

Picture signal is not shown?

The picture optimizer plus HD (SDI) is set to "720p" resolution in its factory settings (equals the standard video resolution 576p) at a frame rate of 50 Hz for PAL signals (NTSC: 720p at 60 Hz).

This resolution is accepted by all HD ready panels and by the most analogue and digital playback units.

However some digital displaying devices do not "understand" a video resolution like "720p" at their DVI and VGA input, as these interfaces were only meant for PC signals in these cases and can't recognize video signals.

Please test following resolutions in sequence through: Press in addition on the remote maintenance first the key [res]. In the display the menu **"Active Resolution"** is indicated with the present resolution ("720p"). Press now [enter], the active resolution is now deposited blue. Select with [+] / [-] keys the desired resolution and activate these with [enter] key. Press the key [res] repeated to close the menu "Active resolution".

- "doubling" (576p / 480p)
- "720p" (1280 x 720p)
- "1080i" (1920 x 1080i)

If none of these resolutions show a picture signal, the displaying device does not accept video resolutions and / or the selected signal format over the used interface (all other sources for errors like faulty connections, defective cables or an incompatible signal format should be excluded).

In this case please (for the time being*) connect the displaying device via a different interface and / or a different signal format to the picture optimizer plus HD (SDI). For example change from DVI to YUV or from VGA (RGB HV) to VGA (RGBs) and / or from YUV to RGB HV via 5 x BNC socket etc.

**) probably the initial connection variant can though be used via a "custom resolution", find more in the point "Expert Menu" (from page 86 on)*

With a different connection and one of the above mentioned resolutions you should normally get a picture signal at the displaying device.

Please note:

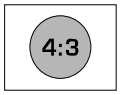
In case the above mentioned resolutions do neither lead to a result with different connections, unfortunately there may be a (very rare) incompatibility: Your displaying device can not render progressive video signals. In exceptional cases such devices can nevertheless be accessed by using a special "custom resolution". Please contact your specialized dealer and / or the cinemateq support hotline.

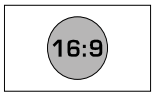
Which aspect ratio conversion is the right one?

The selection of the appropriate format conversion for your requirements depends on four factors:

1. Aspect ratio of the displaying device

There are two different aspect ratios or "picture formats" for displaying devices:



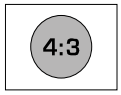


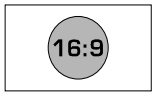
Whilst the aspect ratio is rather obvious from the external dimensions for screens, for DLP- or LCD projectors you need to pay attention to the so called "panel size" and / or "format". Usually this information can be found in the technical data under "aspect ratio" or "picture format".

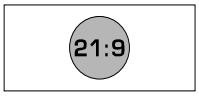
CRT projectors are an exception: for technical reasons their aspect ratio is always at 4:3, however can be set to 16:9 using the so called "convergence" function – which is normally done.

2. Aspect ratio of the projection screen

This factor is of course only relevant for owners of projectors. There are three kinds of projection areas and / or -screens:





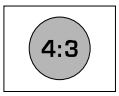


3. Format conversion by the DVD Player

IMPORTANT: In case you use a DVD Player as video source, the integrated format conversion should always be set to 16:9 when connected to a picture optimizer plus HD (SDI). Otherwise the DVD video signal, in case larger than 4:3, is "equipped" with black bars by the player. Only when set to 16:9 your player delivers the highest resolution video signal to the picture optimizer plus HD (SDI).

4. Format of the video signal

In order to select the right format conversion you need to know which format your original video signal has. There are the following basic formats in which a video signal can be mastered:



4:3 (1,33:1)

16:9 (1,85:1) letterbox

16:9 (1,85:1) anamorphic

21:9 (2,35:1) letterbox

21:9 (2,35:1) anamorphic

Usually "anamorphic", i.e. vertically distorted video signals, are only available on latest generation DVDs so using the maximum possible resolution of the PAL or NTSC signal. Older DVDs, videos or analog and digital TV signals mostly only offer a 4:3 TV format or "letterbox" versions limited by black bars. Video signals from cameras, PCs or game consoles are usually always in 4:3 format.

The format your DVD or video has been mastered in, is most of the times printed on the backside of the cover (e.g. under "picture format"). However the information is sometimes confusing. Here are some examples what this information can look like (deviations possible!):

If you know about these four factors, you can now very easily ascertain which of the five format conversions of the picture optimizer plus HD (SDI) is the right one for your individual requirements.

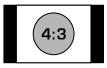
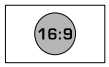
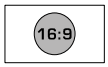
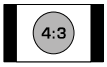
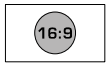
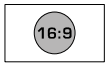
4:3 1,33:1	➔ 4:3 (1,33:1)	
16:9	➔ 16:9 (1,85:1) letterbox	
4:3 1,85:1	➔ 16:9 (1,85:1) letterbox	
16:9 anamorphic	➔ 16:9 (1,85:1) anamorphic	
„Widescreen Version enhanced for 16:9 TVs"	➔ 16:9 (1,85:1) anamorphic	
16:9 1,85:1	➔ 16:9 (1,85:1) anamorphic	
2,35:1	➔ 21:9 (2,35:1) letterbox	
16:9 2,35:1	➔ 21:9 (2,35:1) anamorphic	
„Widescreen anamorphic mastered" (Aspect Ratio 2,35:1)	➔ 21:9 (2,35:1) anamorphic	

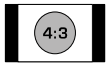
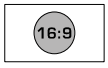
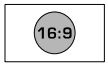
Adjustment of picture location and size

If you have a picture on your playback unit (especially flat screens), but it is „prolonged“ or „too small“, you can re-adjust it via the menu of the picture optimizer plus HD (SDI). You can learn more about this in the handbook under : „the optimal configuration“, as of page 89

Select the table suitable for your displaying device!

Here you can find the value to set for format conversions depending on aspect ratio (screen / projection screen) and format of the video signal. The illustrations show the picture formats produced by those.

For LCD- or plasma screens	**Format of the video signal**				
	4:3 (1,33:1)	16:9 (1,85:1) letterbox	16:9 (1,85:1) anamorphic	21:9 (2,35:1) letterbox	21:9 (2,35:1) anamorphic
In 4:3 format	pass	pass	-33 V	pass	-33 V
In 16:9 format	-33 H 	+ 33 V 	Pass 	+33 V	pass
For 4:3 projectors	**Format of the video signal**				
	4:3 (1,33:1)	16:9 (1,85:1) letterbox	16:9 (1,85:1) anamorphic	21:9 (2,35:1) letterbox	21:9 (2,35:1) anamorphic
With 4:3 projection screen	pass	pass	-33 V	pass	-33 V
With 16:9 projection screen	-33 H&V 	pass 	-33 V 	pass	-33 V

For 16:9 projectors	**Format of the video signal**				
	4:3 (1,33:1)	16:9 (1,85:1) letterbox	16:9 (1,85:1) anamorphic	21:9 (2,35:1) letterbox	21:9 (2,35:1) anamorphic
With 4:3 projection screen	-33 H	+ 33 V	pass	+33 V	pass
With 16:9 projection screen	-33 H 	+ 33 V 	Pass 	+33 V	pass

Tip:
The topic of format conversion is very complex and easy to misunderstand. In order to get a better feeling for which setting is correct, we recommend to try the different format conversions (e.g. with a test pattern "circle").

This way you can see, how the picture changes and so can better comprehend the conversion process. Your projector or screen can not be damaged during this exercise.

AUDIO DELAY

Due to the complex processing of the video signals in the picture optimizer plus HD (SDI) there is inevitably a very short time delay between the video signal and the (not processed) audio signal. This delay can be compensated by some receivers and DVD players by a so called 'Audio Delay' setting, i.e. the audio signal is transmitted with a certain time delay. We recommend the following audio delay settings:

- **PAL signals: 60ms**
- **NTSC signals: 50ms**

CONNECTION TO A PC

To connect a PC to the picture optimizer plus HD (SDI) the following procedure is recommended:

1. Shut down PC
2. Turn off picture optimizer
3. Link up to the cable network (e.g. with DVI to HDMI cables and to HDMI input 3 on the picture optimizer)
4. Turn on display
5. Turn on picture optimizer
6. Select (#) + „3" (for bypass HDMI 3) with the remote control
7. Turn on PC, finished

MAINTENANCE & CARE

Your picture optimizer plus HD (SDI) is a maintenance free device, which you will enjoy for many years if you treat it carefully and consider all recommendations of this user manual and the usual rules for treatment of electronic devices.

Clean the picture optimizer plus HD (SDI) with a damp (not wet!) soft cloth. Avoid strong or scrubbing cleaning agents or solvents, as otherwise the chassis surface could be damaged. Always disconnect the picture optimizer plus HD (SDI) from main power supply before cleaning.

ATTENTION: We recommend to clean the sensitive display of the picture optimizer plus HD (SDI) only with a eyeglass cleaning cloth without using any cleaning agents or liquids.

WARRANTY

Warranty registration

In order to activate the two-year device warranty, you need to register your picture optimizer plus HD (SDI) at cinemateq within 4 weeks from purchase date.

Please therefore use the online registration form on www.cinemateq.com in the support section under device registration.

Please note:
Only as a registered customer you have the possibility, to download new firmware (software) versions or new extension options over the internet.

In a warranty case please get in contact with your specialized dealer or directly with us as the manufacturer. Before sending the device in to our support center a warranty case should have been clearly determined.

Therefore please contact our support hotline via e -mail, fax or phone (see page 62) in order to define the warranty case and to get a RMA number for send-in of the device – please inform us in any case about the serial number and the purchase date of the device. We appreciate your understanding, that we unfortunately can not accept deliveries without RMA number.

Normally the processing of a warranty case is done in approximately 3 working days. Our general trading conditions apply:

- **Warranty conditions of cinemateq GmbH & Co. KG**

1. Warranty Cover

[1] The warranty extends to the delivered product with all parts. The warranty will be provided in such a manner, that parts, which have become defective notwithstanding appropriate treatment and in compliance with the operating handbook but due to manufacturing faults and/or material defects will be exchanged free of charge or repaired at cinemateq's option. Alternatively cinemateq reserves the right to replace the defective product by a follow-up product. Cinemateq will pay for the costs of material, hours of work and reshipment to the customer.

[2] All replaced parts will become the property of cinemateq.

[3] Cinemateq is entitled to undertake technical changes beyond the repair and replacement to adjust the product to the actual state of the art. There would be no additional costs for the buyer. An inalienable right does not exist.

2. Warranty time

The term of warranty is two years from the date of purchase.

3. Settlement

[1] Do any malfunctions of the product appear within the term of warranty all warranty claims have to be submitted without delay but within seven days at the latest.

[2] Before a complaint under appeal of the warranty can be submitted the customer has to check the section "trouble-shooting and problem treatment" in the operating handbook of the product and check if the problem can be solved on-site.

If the problem continues to exist notwithstanding any error diagnosis, the customer should contact the cinemateq support-hotline for support and submit the following information:

a) product name and serial number

b) Description of the problem occurred

c) Contact information

d) Date of sale and sales agency

After the error and damage diagnosis cinemateq will classify the warranty claim as effective where appropriate and will handover to the customer a repair approval number (RMA) and arrange preparation to execute the service demand. Only after existence of these conditions the customer is entitled to ship the product, including a copy of the invoice and with a statement of the RMA number to the service center of cinemateq for verification.

[3] The shipment to the location which accepts warranty claims and/or exchanges the repaired product, is on own risk and costs and has to be paid by the buyer. The charges for the shipment back to the customer will be paid by cinemateq. Damage which is caused by defective packaging of the customer adhere to the customer.

[4] Warranty claims will only be taken into account if the copy of the invoice and on request the original invoice together with the product are submitted and an RMA number has been claimed and granted previously via the cinemateq support.

4. Deterioration in transit

Deterioration in transit, not recognizable from the outside (e.g. damaged housing) have to be enforced without delay against the shipping person and the sender. Any damage not recognizable from the outside has also to be enforced after detection, however within three days the latest after delivery against the shipping person and the sender in writing.

5. Exclusion of warranty

[1] Any warranty claims are excluded;

- when the serial number has been removed;

- when the product has been damaged or destroyed by the influence of act of God (strong gale, lightning, fire, water, theft, insurgency, looting, harmful war effects, and the like or by environmental influence (moisture, stroke by current, dust and the like);

- when the product was stored or run under conditions, which are beyond of any technical specifications;

- when the damage occurred by improper handling – particularly by non-observance of the systems description and the operator's handbook;

- when the product has been opened, repaired or modified by persons not authorized by cinemateq;

- when the product shows any mechanical damage of any kind;

- when the warranty claim was not reported according to "settlement";

- Or comparable facts are available, which indicate an impropriate use or operation of the product.

[2] Should the customer claim any defects which are excluded by the warranty, cinemateq reserves the right to charge the customer.

[3] If it turns out that the reported malfunctions of the product are caused by erroneous foreign hardware and/or software installation or operation, cinemateq reserves the right to charge the purchaser for the test efforts.

[4] This warranty only refers to the original purchaser and is not negotiable. Any assignment of rights and obligations of the customer from the contract entered with us require an approval in writing to become effective.

6. Supplementary regulations

[1] The warranty does not impact or interfere with the legal warranty claims or any other contractual claims of the customer against its seller. Such claims can be enforced optionally against a committed warranty. As far as the customer has decided to take advantage of those services on the basis of the warranty, and those services are provided by cinemateq, all legal and contractual demands of the customer are fulfilled simultaneously, even against the seller of the product.

[2] Further demands are not substantiated by this warranty either, particularly based on any redhibition or depreciation. Claims for indemnity, for what ever legal ground, are excluded. This is not valid for any damage chargeable to cinemateq for lesion of life, body or health as well as claims of the customer against the law on liability for defective products.

7. Contractual obligation, place of fulfillment and place of jurisdiction.

[1] Only the non-standardized law of the Federal Republic of Germany is valid for those trading conditions and the whole legal relation between cinemateq and the customer.

[2] Place of fulfillment of all warranty claims are the registered offices of cinemateq in Munich, Germany.

[3] As far as legally permissible, all parties herewith agree, that the exclusive jurisdiction for all disputes will be the resident of cinemateq. It is agreed that cinemateq is being entitled to bring an action at the principal place of the customer.

8. Final clauses

[1] Additional or deviating memoranda of understanding from those trading conditions or other written memoranda of understanding need a written form for their effectiveness.

[2] In case individual clauses of those trading conditions or clauses under other memoranda of understanding are or are becoming ineffective, the effectiveness of the remaining clauses or memoranda of understanding are not affected. In this case cinemateq reserves all rights to supersede the ineffective clause by an effective one, which comes close to the ineffective clause regarding its legal and economic consequences. The same is valid as far as the agreement of one of the parties involved shows a non-foreseeable gap.

TECHNICAL DATA

Type	▪ picture optimizer plus HD (SDI) high end video picture optimizer and video switcher
Signal standard	▪ PAL/NTSC (PAL 60, NTSC 3.58, NTSC 4.42/SECAM)
Video inputs (11)	▪ 1 x SCART-socket with RGB or FBAS signal ▪ 2 x FBAS or SDI (SDI-Version) ▪ 2 x S-Video-socket with S-Video signal ▪ 2 x 3 Cinch-socket with YUV component signal ▪ 4 x HDMI with HDCP up to 1080i/p
Video outputs (4)	▪ 5 x BNC socket: RGBHV / RGBS / RGsB / YUV ▪ 1x VGA socket: RGBHV / RGBS / RGsB / YUV ▪ 1 x HDMI incl. Audio (HDCP conform) ▪ 1x DVI socket: digital DVI (HDCP conform)
Audio inputs(9)	▪ 3 x Cinch digital audio ▪ 2 x Toslink digital audio ▪ 4 x HDMI
Audio outputs (3)	▪ 1 x Cinch digital audio ▪ 1 x Toslink digital audio ▪ 1 x HDMI
Basic functions	▪ custom resolution ▪ frame rate conversion ▪ format conversion ▪ format conversion correction ▪ electronic lens shift ▪ overscan ▪ input configuration (picture parameters) ▪ picture sharpness adjustment ▪ picture size & -position adjustment ▪ TV-Mode ▪ noise filter ▪ fixed presets ▪ RS232 output commands ▪ Sync polarity freely adjustable ▪ RGB color correction ▪ RGB luminance adjustment (acc. to VESA or SMPTE)

Optimizing functions	▪ high end deinterlacer ▪ flexible line multiplier ▪ flexible frame doubling ▪ 2:2/3:2 Pull down ▪ free format conversion (Aspect Ratio Conversion) ▪ adaptive motion control ▪ adaptive comb filter ▪ time base correction ▪ 10-bit processing
Adjustable picture parameters	▪ brightness ▪ contrast ▪ color saturation ▪ color graduation (hue) ▪ color temperature ▪ Gamma correction ▪ chroma delay ▪ readjustment picture position & -size
Further	▪ 3 presets of all functions & parameters can storable ▪ on-screen menu & graphical display with 3-level brightness adjustment ▪ operation via IR remote control & RS-232 interface ▪ firmware-Update via RS-232 possible (Internet download) ▪ external power adapter 230 V AC (optional: 110 V) ▪ Measures: 431x300x69 mm (WxDxH) ▪ color: silver, blue display, front plate flat brushed silver ▪ weight: 4 kg ▪ 2 years warranty

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